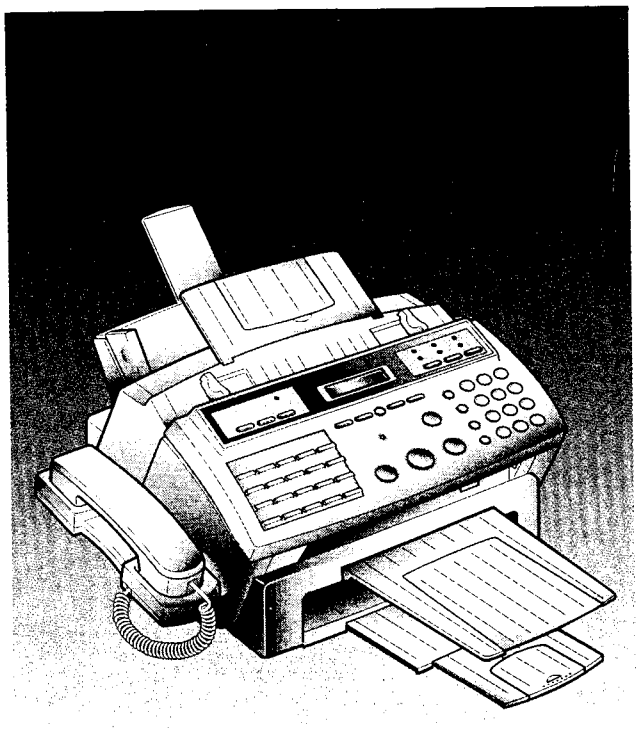
SAMSUNG

FACSIMILE

SF4000/SF4200

SERVICE *Manual*

FACSIMILE



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1. Precautions

Follow these safety, ESD, and servicing precautions to prevent personal injury and equipment damage.

1-1 Safety Precautions

1. Be sure that all built-in protective devices are in place. Restore any missing protective shields.

2. Make sure there are no cabinet openings through which people- particularly children- might insert fingers or objects and contact dangerous voltages.

3. When re-installing chassis and assemblies, be sure to restore all protective devices, including control knobs and compartment covers.

4. Design Alteration Warning:
   Never alter or add to the mechanical or electrical design of this equipment, such as auxiliary connectors, etc. Such alterations and modifications will void the manufacturer's warranty.

5. Components, parts, and wiring that appear to have overheated or are otherwise damaged should be replaced with parts which meet the original specifications. Always determine the cause of damage or overheating, and correct any potential hazards.

6. Observe the original lead dress, especially near sharp edges, AC, and high voltage power supplies. Always inspect for pinched, out-of-place, or frayed wiring. Do not change the spacing between components and the printed circuit board.

7. Product Safety Notice:
   Some electrical and mechanical parts have special safety-related characteristics which might not be obvious from visual inspection. These safety features and the protection they provide could be lost if a replacement component differs from the original. This holds true, even though the replacement may be rated for higher voltage, wattage, etc.

   Components critical for safety are indicated in the parts list with symbols ⚠ ⚠ . Use only replacement components that have the same ratings, especially for flame resistance and dielectric specifications. A replacement part that does not have the same safety characteristics as the original may create shock, fire, or other safety hazards.

1-2 ESD Precautions

Certain semiconductor devices can be easily damaged by static electricity. Such components are commonly called "Electrostatically Sensitive (ES) Devices", or ESDs. Examples of typical ESDs are: integrated circuits, some field effect transistors, and semiconductor "chip" components.
The techniques outlined below should be followed to help reduce the incidence of component damage caused by static electricity.

CAUTION: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

1. Immediately before handling a semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, employ a commercially available wrist strap device, *which should be removed for your personal safety reasons prior to applying power to the unit under test.*

2. After removing an electrical assembly equipped with ESDs, place the assembly on a conductive surface, such as aluminum or copper foil, or conductive foam, to prevent electrostatic charge buildup in the vicinity of the assembly.

3. Use only a grounded tip soldering iron to solder or desolder ESDs.

4. Use only an "anti-static" solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESDs.

5. Do not use Freon-propelled chemicals. When sprayed, these can generate electrical charges sufficient to damage ESDs.

6. Do not remove a replacement ESD from its protective packaging until immediately before installing it. Most replacement ESDs are packaged with all leads shorted together by conductive foam, aluminum foil, or a comparable conductive material.

7. Immediately before removing the protective shorting material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.

8. Maintain continuous electrical contact between the ESD and the assembly into which it will be installed, until completely plugged or soldered into the circuit.

9. Minimize bodily motions when handling unpackaged replacement ESDs. Normal motions, such as the brushing together of clothing fabric and lifting one's foot from a carpeted floor, can generate static electricity sufficient to damage an ESD.

1-3 Lithium Battery Precautions

1. Exercise caution when replacing Lithium battery. There could be a danger of explosion and subsequent operator injury and/or equipment damage if incorrectly installed.

2. Be sure to replace the battery with the same or equivalent type recommended by the manufacturer.

3. Lithium batteries contain toxic substances and should not be opened, crushed, or burned for disposal.

4. Dispose of used Lithium batteries according to manufacturer's instructions. Under various state and local laws, it may be illegal to dispose of this battery into the municipal waste stream. check with your local solid waste officials for details in your area for proper recycling or disposal options.

2. Specification

GENERAL

Application Circuit :	PSTN or behind PABX
Mode of Operation :	Half-Duplex
Communication Mode :	CCITT Group 3
Effective Scanning Width :	A4 (210 mm)
Scanning Method :	CIS
Recording Paper Size :	
SF40xx	A4, Letter, Legal
SF41xx, SF42xx	A4, Letter, Legal for FAX B5, A5, Executive, Envelope, OHP film, Label for printer
Effective Recording Width :	8 inch (203.2 mm)
Recording Method :	Thermal Ink-Jet
Print Speed :	2 ppm for mono, 0.25 ppm for color
ADF :	30 sheets (based on A4 /20 lbs)
Paper Capacity :	100 sheets (based on A4)
Resolution :	Standard/Fine/Super Fine
Gray Scale :	32 levels
Contrast :	Light/Dark/Photo
Memory :	64 kbyte EPROM, 32 kbyte SRAM 512 kbyte DRAM, 512 kbyte optional DRAM
Modem Speed :	9600 bps for SF4000/SF4100/SF4200 14,400 bps for SF4020/SF4120/SF4220
Coding Method :	MH/MR/MMR
Transmission Speed :	12 seconds (Phase C by CCITT Chart no.1)
Back Up Battery :	3 V Lithum / non-rechargeable
Power Supply :	AC 220 - 240 V
Insulation Resistance :	50 Mohm (typ. 3 G at 500 V)
Dimensions :	380 x 320 x 320 mm

LIU

Out Band Signal Level :	
0 - 4 kHz	P-20 dBm or less
4 - 12 kHz	P-40 dBm or less
2 kHz or more	P-60 dBm or less
DC Resistance :	50 - 250 ohm (DC loop current : 20 -120 mA)
Ring Sensitivity :	40 - 150 Vrms, 16 - 68 Hz
Input Level Range :	0 - -46 dBm
Dial Pulse :	
Make/Brake Ratio	40 : 60
Pulse Speed	10 ± 0.8 pps (typ. 9.9 pps)
Inter-Digit Time	800 msec

Transmission Level :
- High - 12.5 ± 2 dBm
- Low - 14.5 ± 2 dBm
- Twist -2 dBm

DC Resistance : 50 - 300 ohm
Signal Duration : 120 msec or more
Signal Output Time : 50 msec or more
Minimum Pause : 30 msec or more
Rising Time : 5 msec or less
Coding Format

L \ H	1209 Hz	1336 Hz	1477 Hz
697 Hz	1	2	3
770 Hz	4	5	6
852 Hz	7	8	9
941 Hz	*	0	#

Frequency Tolerance : +/-1.5%

PRINTER (for SF41xx/SF42xx)

Printer I/F Port : Centronics 36 pin
Printer Emulation : PCL3 compatible HBP
Image Data Transmission : 8 bit, Uni-directional
Printing : Mono/Color

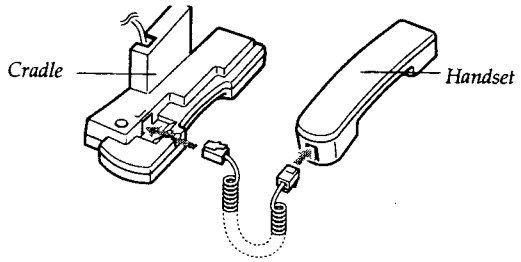
PC CONNECTIVITY (SF42xx)

PC Scanner & Fax I/F Port : RS232C, 9 pin
PC Scanner I/F Driver : TWAIN
PC Fax Compatibility : Class 2 Emulation

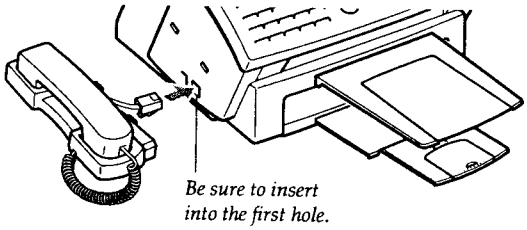
3 Installation

3-1 Handset and Handset Cradle

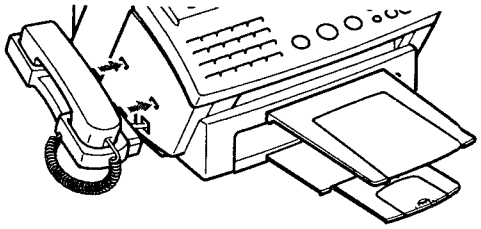
1. Plug one end of the coiled cord into the jack on the handset. Then plug the other end into the modular jack on the bottom of the handset cradle.



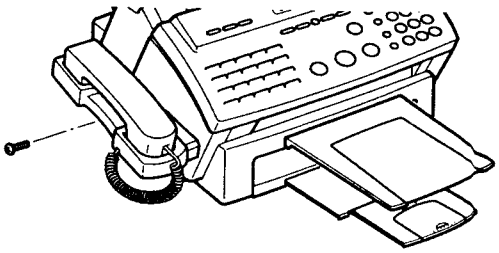
2. Plug the cradle's modular cord into the modular jack on the left side of your machine.



3. Attach the handset cradle to the main body. Insert two tabs of the cradle into the slots on the left side of the main body as shown, and push down.

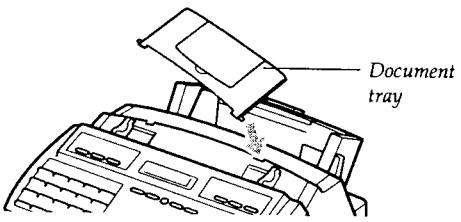


4. Secure the cradle using the supplied screw. Place the handset in the cradle.

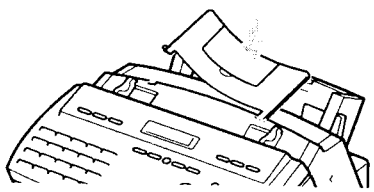


3-2 Document Tray

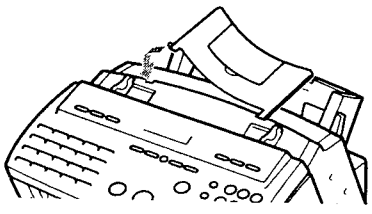
1. Hold the document tray with both hands and insert one end of the tray into the corresponding slot as shown.



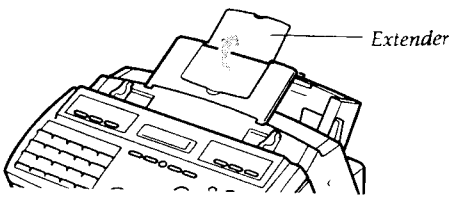
2. Gently flex the tray in the middle, until the other end of tray clears the corresponding slot on the machine.



3. Insert the other end of the tray into the corresponding slot as shown.

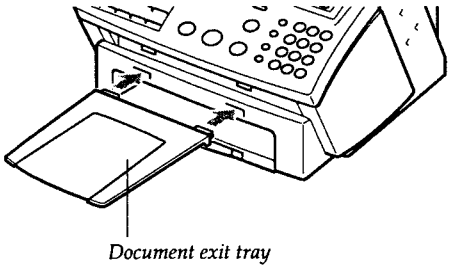


4. If necessary, fold out the document tray extender.

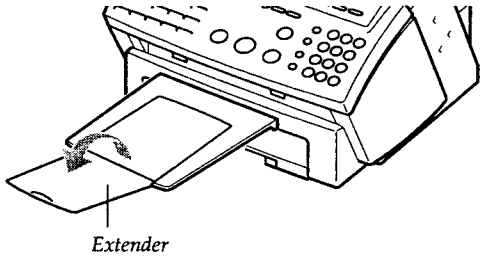


3-3 Document Exit Tray

1. Insert two tabs on the document exit tray into the slots on the front of your machine.

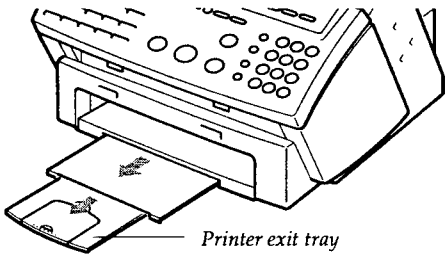


2. Fold out the extender, if necessary.

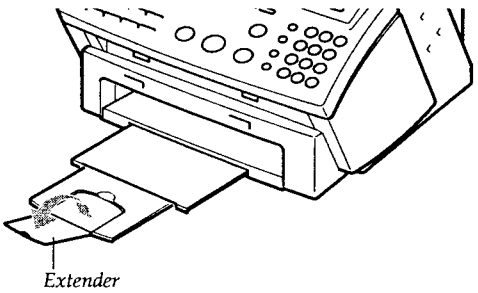


3-4 Printer Exit Tray

1. Gently pull the printer exit tray toward you to the desired paper length.

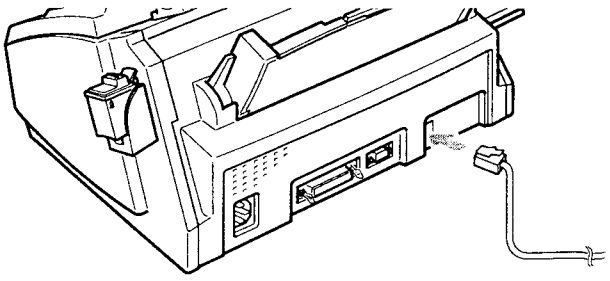


2. Fold out the extender, if necessary.



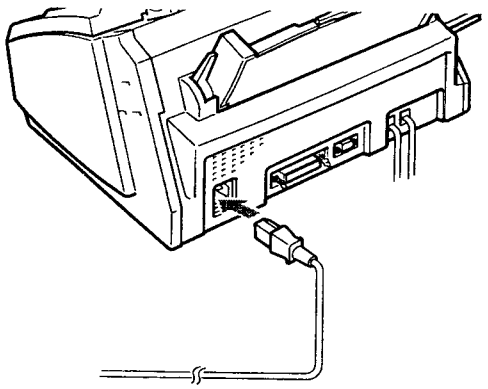
3-5 Telephone Line

Plug one end of the telephone line cord into the TEL LINE jack and the other end into a standard modular phone wall jack.



3-6 AC Power Cord

Plug one end of the cord into the back of the machine and the other end into a standard, grounded, 3-prong AC power outlet (220 V, 60 Hz)



The machine turns on. All lamps on the control panel light up and the LCD displays 'SYSTEM INITIAL' then 'PAPER OUT'. Load the paper as described on page xxxx.

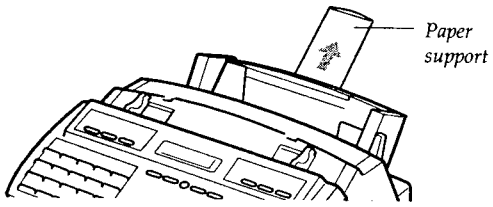
If you want to turn the machine off, unplug the power cord.

Note : If documents are lost from memory due to a power failure, the machine automatically prints out a report when power is restored.

3-7 Loading Paper

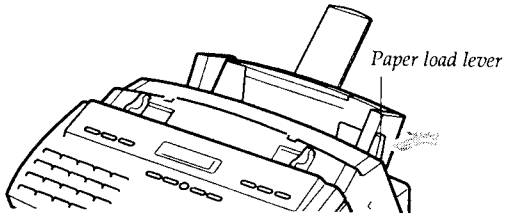
The LCD display 'PAPER OUT' when no paper is loaded. You can load approximately 100 sheets of paper.

1. Pull the paper support on the paper bin all the way up.



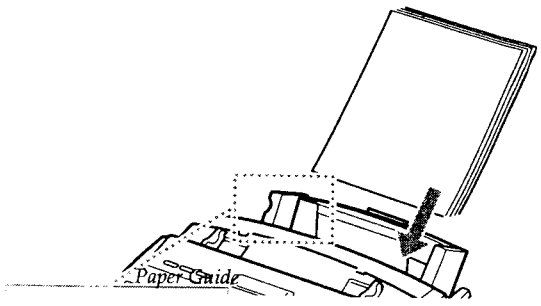
2. Push the paper load lever away from you to open the sheet feeder.

   Warning sound beeps for about 30 seconds, The LCD displays 'CHECK LOAD LEVER' and the paper size selected through user options on page xxxx. To install a different-sized paper, change the option after loading paper.



3. Insert paper in the paper bin. If you are using leherhead or pre-printed paper, insert the paper hed down, with the print side facing you.

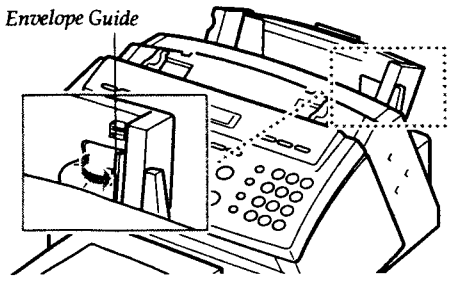
   Hold the left paper guide and move it to the right to match the width of the paper.



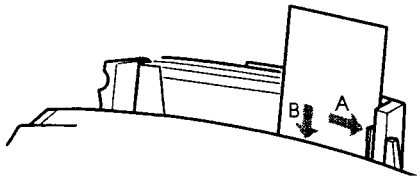
4. Pull the paper load lever toward you to close the sheet feeder.

3.8 Loading Envelopes

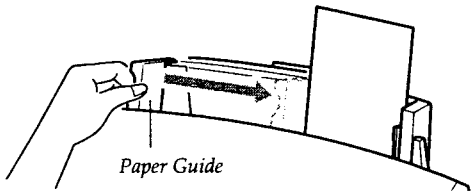
1. Flip the envelope guide out.



2. Load envelopes against the far right guide (A) and push slightly down (B). The right edge of the envelope must align with the guide edge.



3. Slide the left paper guide to the right to match the width of the envelope.

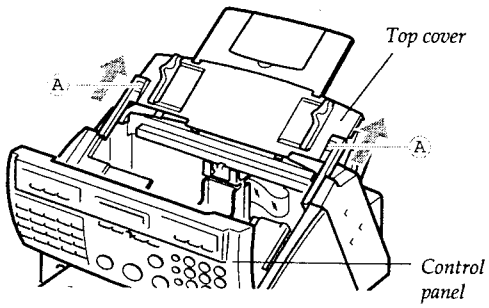


3-9 Installing Print Cartridge

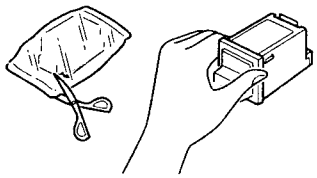
3-9-1 Print Cartridge

1. When installing a new print cartridge, press the CARTRIDGE button on the control panel. The LCD displays 'CHECK CARTRIDGE ! PLEASE INSTALL', and the print cartridge moves to the center load position.

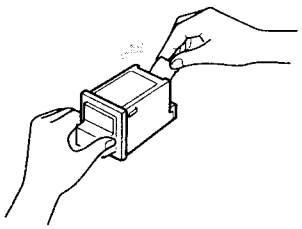
2. Pull the control panel out and slide the top cover up to position A, until it clicks.



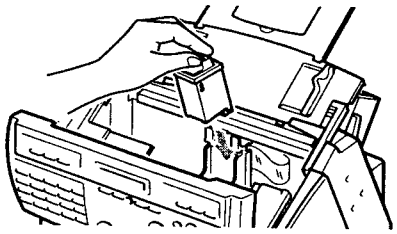
3. Remove the print cartridge from its packaging. Hold the print cartridge by the black areas or colored top only. Do not touch the copper area.



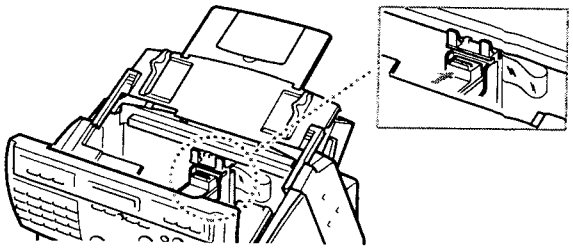
4. Carefully remove the tape covering the printhead. Be sure to remove all the tape.



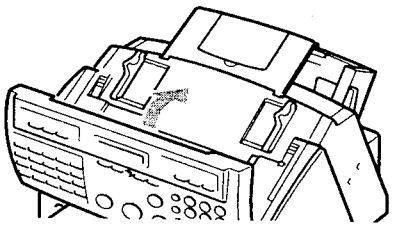
5. Insert the print cartridge in the carrier.



6. Push the cartridge firmly in the direction of arrow until it clicks into place.



7. After installing the print cartridge, replace the top cover and the control panel to their normal positions.



8. Press the CARTRIDGE or ENTER button. The LCD displays 'THE CARTRIDGE IS 1:NEW 2:USED'.

9. Choose '1:NEW' by using the ◀ or ▶ button, or by pressing the 1 button.

10. Press the ENTER or CARTRIDGE button. The LCD briefly displays 'MONO INSTALLED' (or 'COLOR INSTALLED', for color print cartridge).

    If the cartridge is not installed properly, the LCD displays 'CHECK CARTRIDGE! PLEASE INSTALL'. Remove the cartridge and reinsert it.

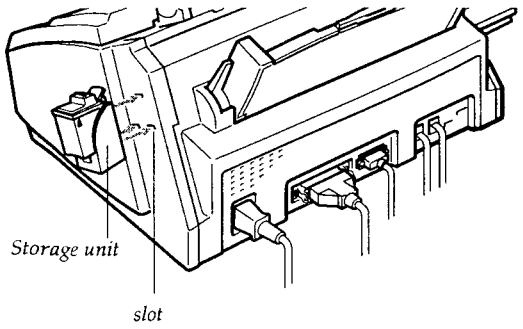
Notes :

- When you install a new cartridge, you must choose '1:NEW.' When you install a used cartridge, select '2:USED', which helps you check the amount of ink remaining. If you mix up several used cartridges, it will be difficult to check the amount of ink remaining. Once a new print cartridge is installed, use it until it has completely run out of ink.
- If the new cartridge does not give good print quality, consult the 'Printer Cartridge Maintenance' section.

3-9-2 Print Cartridge Storage Unit

The print cartridge storage unit provides a convenient place to store an extra black or color print cartridge, and prevents an opened cartridge from drying out.

Attach the storage unit by inserting its three tabs into the slots on right side of the main body and lowering it until it clicks into place.

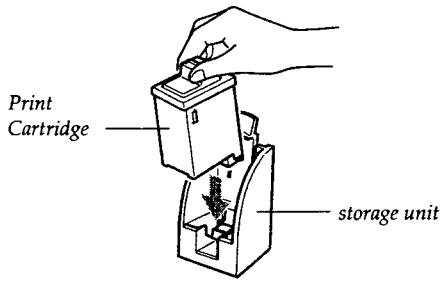


3-9-3 Storing a Print Cartridge in the Storage Unit

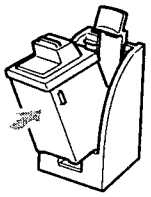
When switching between the color and black print cartridges, keep the unused one in the print cartridge storage unit. The storage unit prevents the print cartridge from drying out while providing easy access to it.

To store a print cartridge in the storage unit

1. Holding the print cartridge by the colored top, insert it into the storage unit.



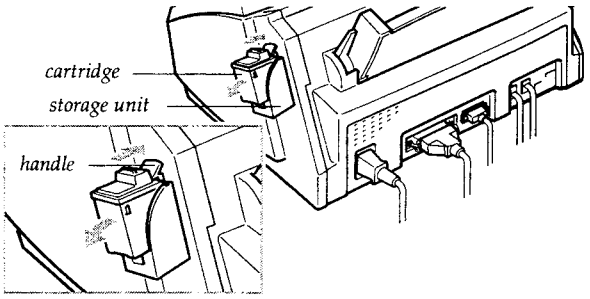
2. Push firmly in the direction of arrow until it clicks into place.



To remove a print cartridge from the storage unit

Hold the print cartridge and pull it firmly in the direction of arrow.

While pulling the cartridge toward you, push the handle of the storage unit backward, releasing the cartridge.



3-10 Connecting to Your PC (SF41xx, SF42xx)

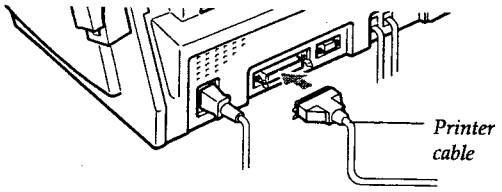
3-10-1 Connecting SF4200/SF4220 to Your PC

Use the serial cable and the parallel print cable that supports bidirectional communications to connect your machine and the computer.

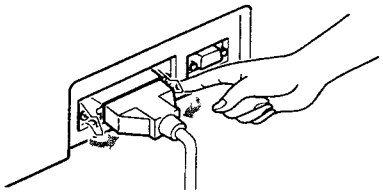
Connecting the printer cable

1. Connect the parallel printer cable to the 36 pin contronics jack on your machine.

   It is recommended to use a parallel cable that supports IEEE-P1284 bidirectional communications.



2. Fasten the metal clips to the parallel cable.



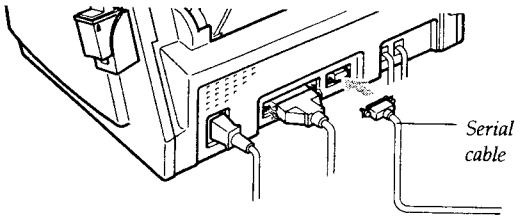
3. Connect the other end of the parallel cable to your computers 25 pin parallel port.

Connecting the serial cable

4. Connect the supplied RS232-C serial cable to the computer.

   Secure the serial cable with screws.

   Connect the other end of the serial cable to your computer.

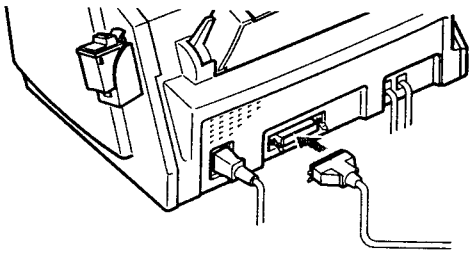


3-10-2 Connecting SF4100/SF4120 to Your PC

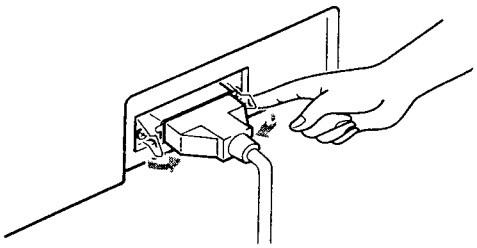
Use the bidirectional printer cable to connect your machine and the computer.

1. Connect the parallel printer cable to the 36 pin contronics jack on your machine.

   It is recommended to use a parallel cable that supports IEEE-P1284 bidirectional communications.



2. Fasten the metal clips to the parallel cable.



3. Connect the other end of the parallel cable to your computers 25 pin parallel port.

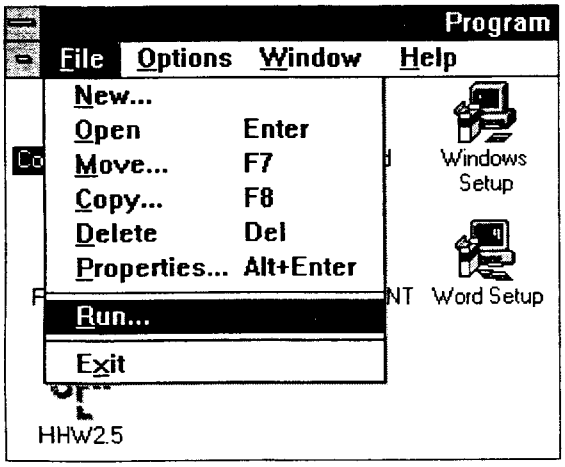
3-11 Setting Up Printer (SF41xx, SF42xx)

3-11-1 Installing the Windows Printer Driver Software

If your computer operates with Windows 3.1 (or Windows 95) or Windows for Workgroups, follow the instructions below to install the printer software.

With Windows 3.1

1. Start Windows.
2. Insert the setup diskette into drive A (or B)
3. In Windows Program Manager, click on 'File', then choose 'Run'.



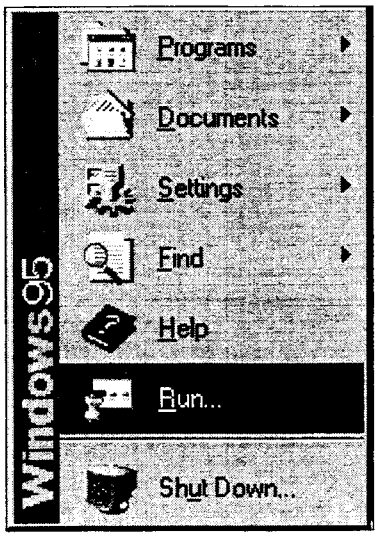
4. In the command line dialog box, type a:setup (or b:setup), then click 'OK'.
5. Follow the instructions on the installation screens.

   For the latest information on installing and using the printer with Windows applications, consult the Read Me and Online Help files in the Samsung MFP 4100/4200 program group window.

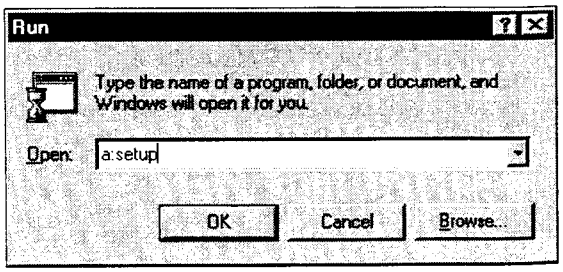
With Windows 95

To install the printer software with Windows 95 :

1. Start Windows.
2. Insert the setup diskette into drive A (or B).
3. Click 'Start' on the desktop, and then choose 'Run'.



4. In the Run dialog box, type 'a:setup (or b:setup)', then click 'OK'.
5. Follow the instructions on the installation screens.



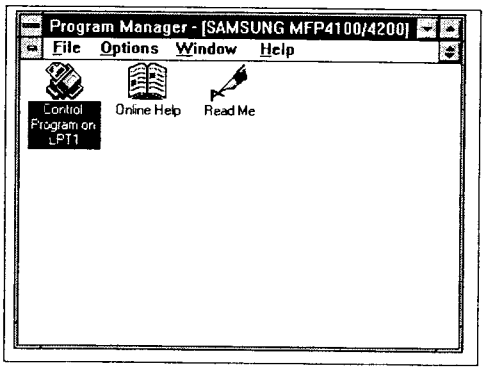
3-11-2 Running Windows Printer Software

The Samsung MFP 4100/4200 Control program lets you:

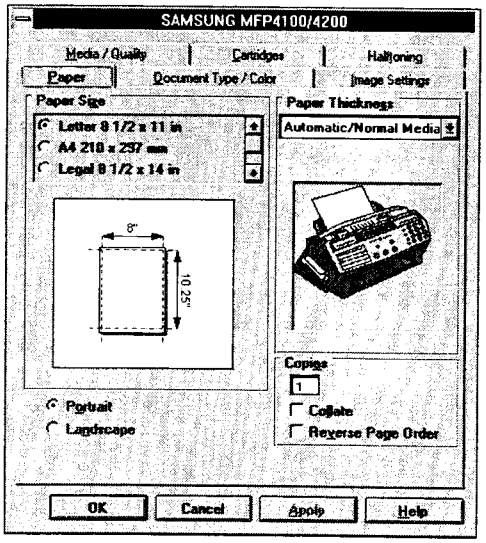
- Monitor your print jobs.
- Watch a print job as it progresses.
- Monitor print cartridge ink level.
- Install or replace a print cartridge.
- Perform print cartridge maintenance.
- Access the Windows Print dialog boxes to change printer settings.
- Print from Windows-based applications.
- Test your printer.
- Change the print queue parameters.

Starting the software from windows

1. To start the Printer Control Program, double-click the Samsung Control Program icon.



2. Click the Windows Printing tab, then the Windows Driver Setup button in the Samsung Control Program to browse through the available options.



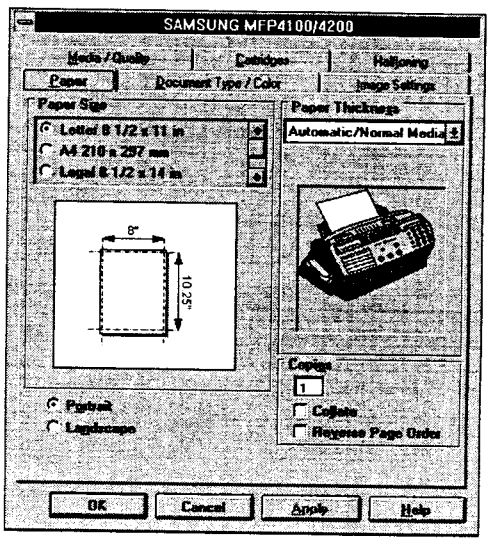
Before you print

Make sure Samsung MFP 4100/4200 is listed as your default printer in the Windows Control Panel (the Setup Program does this automatically during installation).

Print as you normally would — for example, by choosing Print from your application's File menu.

Changing printer settings

Before printing, you may want to change some printer settings. The Samsung MFP 4100/4200 dialog box lets you make changes to options such as paper size, image settings, print quality, and halftoning.



You may open the Samsung MFP 4100/4200 dialog box from :

- a Windows-based application — If you open the Samsung dialog box from an application's Print command, your choices apply only to that print job. The next time you print, you have to choose the print settings again. If you open the Samsung dialog box from an application's Print Setup command, the application stores the settings with your document. The document prints with those settings until you change them.
- Windows Control Panel — These settings will apply to all print jobs and applications until you change the settings.
- Samsung MFP 4100/4200 Control Program — These settings will apply to all print jobs and applications until you change the settings.

Choosing print options from Windows-based applications

The following steps are general instructions. Your Windows-based application may require a slight variation from the procedure. For example, in step 3, your application may have a Printer button in the Print Setup dialog box instead of an Options button.

1. Open the application's File menu.
2. Choose Print (or Printer) Setup.
3. In the Print Setup dialog box, choose Options to open the Samsung MFP 4100/4200 dialog box.
4. Use the tabs to browse through the available options.

After choosing print options, you are ready to print.

Choosing print options from Windows Control Panel

1. In the Windows Main group window, double-click the Control Panel icon.
2. From the Control Panel, double-click the Printers icon to open the Printers dialog box.
3. From the list of installed printers, select the Samsung MFP 4100/4200.
4. Click the Setup button to open the Samsung MFP 4100/4200 dialog box.

After choosing options, you are ready to print.

Choosing print options from the Control Program

1. Double-click the Samsung MFP 4100/4200 Control Program icon to open the Samsung MFP 4100/4200 Control Program.
2. Choose the Windows Print tab.
3. Choose the Windows Driver Setup button.
4. Use the tabs in the dialog box to browse through the options.

After choosing options, you are ready to print.

Online Help

The MFP 4100/4200 software has extensive online Help with detailed information about your machine. You can access online Help from any dialog box. Just choose the Help button, or press the F1 key.

Within online Help, you will find underlined words or "hot text". Click the hot text to instantly view more information on a related topic.

3-11-3 Installing the DOS Printer Software

If you will be printing from DOS applications, follow the steps below :

1. Insert the Setup diskette in drive A (or B).
2. From the DOS prompt, type a:install (or b:intall).
3. Follow the instructions on the screen.
4. When the installation is complete, remove the diskette from the drive.

3-11-4 Using the DOS Printer Software

Printing from DOS applications

When you print from a DOS (not Window based) application, your printer uses PCL 3 emulation. You must install a printer driver for PCL 3 emulation printing in each DOS application.

1. Start your DOS application.
2. Install the Samsung MFP 4100/4200 as the current printer in the DOS application from which you are printing.

   Some applications offer a color or black (mono) version of the Samsung MFP 4100/4200 driver. Choose the color version if you are printing color documents. Choose the black version if you are printing black and white documents.

   If your application does not offer the Samsung MFP 4100/4200 printer driver, it must be installed. You will not be able to print in color without the Samsung MFP 4100/4200 driver.

   For help installing a printer driver, see your application's user documentation.

Choosing print options from DOS

The MJPANEL.EXE program lets you select print options for DOS applications.

You must start the MJPANEL.EXE program from the DOS prompt.

To choose print options for DOS applications :

1. From your application, go to the DOS prompt.
2. From the DOS prompt, type MJPANEL and press ENTER.
3. From the Remote Control Panel, use the arrow keys to select an Options button. Press ENTER. This highlights a setting in the right-hand (Settings) column.
4. Use the arrow key to select from the Settings column of the Remote Control Panel. Press ENTER to choose the setting.
5. Press the Tab key to return to the Options buttons.
6. Choose Exit to return to your application.

MEMO

4. Service Mode

4-1 How To Enter Service Mode

In Service Mode, the technician can check the machine and perform various test, to isolate the cause of a malfunction.

To enter Service Mode, press MENU, #, 1, 9, 3, 4 in sequence, and the LCD briefly displays 'TECH MODE' to indicate that the machine has entered Service Mode. While in Service Mode, the machine still performs all normal operations. To return to normal User Mode, press MENU, #, 1, 9, 3, 4 in sequence again, or turn the power off, then on by momentarily unplugging plugging the power cord.

Options changed while in service mode do not remain changed unless you clear the machine memory.

To communicate via direct connection with another fax machine, press OHD/V.REQ followed by START/ENTER.

4-2 Changing Options

4-2-1 Selectable Options

USER MODE OPTIONS	ITEM	DEFAULT STATUS
CONTRAST LEVEL	[1 - 7]	4
PAPER SIZE	[LETTER, A4, LEGAL]	A4
ADJUST REDUCTION	[LTR → LTR, LTR → A4 A4 → LTR, A4 → A4 LEG → LTR, LEG → A4 LEG → LEG, 85%, 80%, 75%]	A4 → A4
PRINT BOTTOM AREA	[ON, OFF]	OFF
DIALING TYPE	[TONE, PULSE]	PULSE
RING COUNT TO ANSWER	[1 - 6]	2
REMOTE RECEIVE CODE	[0 - 9]	* 9 *
ECM COMMUNICATION	[ON, OFF]	OFF
PRINT QUALITY FOR FAX	[LQ, DRAFT]	LQ
INK SAVE FOR FAX	[OFF, MED, MAX]	OFF
RINGER VOLUME	[LOW,MIDDLE,HIGH]	MIDDLE
TECH MODE OPTIONS	**ITEM**	**DEFAULT STATUS**
MODEM SPEED	[24, 48, 72, 96] (100 bps)	9600 BPS
TRANSMISSION LEVEL	[0 - 15] (-dBm)	-12 dBm
RECEIVE LEVEL	[40 - 49] (-dBm)	-43 dBm
CABLE EQUALIZER	[SHORT, LONG]	SHORT
EPT IN V29	[ON, OFF]	OFF
REMOTE BASE CODE	[0 - 9, *, #]	*
SILENCE DETECTION TIME	[12 sec, UNLIMITED]	UNLIMITED
SILENCE TIME	[1 - 99] (100 ms)	3.7 sec
SILENCE DROP OUT TIME	[1 - 99] (100 ms)	1.7 sec
PAUSE TIME	[1 - 99] (100 ms)	3.0 sec
FLASH TIME	[1 - 99] (10 ms)	80 mS
PULSE MAKE TIME	[1 - 99] (ms)	40 mS
DTMF HIGH FREQUENCY GROUP	[0 - 15] (-dBm)	-6 dBm
DTMF LOW FREQUENCY GROUP	[0 - 15] (-dBm)	-8 dBm
RING ON DETECTION TIME	[1 - 99] (100 ms)	3.0 sec
RING OFF DETECTION TIME	[1 - 99] (sec)	7 sec

4-2-2 Options in Service Mode

Modem Speed

Default = 9600 bps

Select baud rate of 9600, 7200, 4800, or 2400 bps. The lower the baud rate, the larger the acceptable error rate. T30 protocol has a fixed speed of 300 bps in the protocol mode. When the TX speed is set to 9600 or 7200 bps, the RX speed will be either V.29 or V.27 ter. When the TX speed is set to 4800 or 2400 bps, the RX speed will be V.27 ter.

Transmission Level

Default = −12 dBm

You can set the transmission level to between 0 and −15 dBm in 1dB steps using the control panel keypad.
Accuracy is + 0 / −3 dBm.

Receive Level

Default = −48 dBm

Reception level may be too low due to cable losses.
If set to −43 dBm, reception sensitivity will be between 0 and −43 dBm.
If set to −48 dBm, reception sensitivity will be between 0 and −48 dBm.

Cable Equalizer

Default = SHORT

Copper telephone wire attenuates low frequencies less than high frequencies. The longer a cable is, the more pronounced the effect. To compensate for this attenuation you may need to set the machine to match the cable length currently used. Select short or long.

EPT In V29

Default = OFF

You can turn Echo Protection Time (EPT) on or off by using this option. This feature is used to improve poor line communication by sending ECHO in V29 ter.

Remote Base Code (first & last character)

Default = ∗

To place the machine into receive mode via a phone extension, the fax machine must detect the receive code, which comes factory preset to ∗9∗. You can change the first and last characters to any charcter including ∗ and #, but they must be different from the middle digit.

Silence Detection Time

Default = Unlimited

In ANS/FAX mode, after a call is picked up by the answering machine, the fax machine monitors the line. If a period of silence is detected on the line at any time, the call will be treated as a fax message and the fax machine begins receiving. Silence detection time is selectable between limited (about 12 seconds) and unlimited time.

When '12 secinds' is selected, the machine switches to receiving mode as soon as it detects a period of silence.

When 'Unlimited' is selected, the machine waits until the answering operation is concluded even though a period of silence is detected. After the answering operation is conciuded, the machine switches to receiving mode.

Silence Time

Default = 3.7 seconds

Set the time period to detect silence. This feature is available when 'Unlimited' silence detection time feature is activated. However, in case the answering operation is concluded within 12 seconds, the machine detects silence when it lasts for a period of time you set for silence time.

Silence Drop-Out Time

Default = 2.0 seconds

If any signal (tone, voice, fax tone, etc.) is detected during the silence drop-out time, accumulated silence time will be ignored, and silence detection time is restarted.

Pause Time

Default = 3.0 seconds

Choose dial pause time from 0.1 through 9.9 seconds.

Flash Time

Default = 80 msec

Choose flash time from 10 through 990 milliseconds.

Pulse Make Time

Default = 40 msec

Choose dial pulse make time from 1 through 99 milliseconds.

DTMF High Frequency Group

Default = -6 dBm

Select the high frequency group transmission level in DTMF mode.

DTMF Low Frequency Group

Default = -8 dBm

Select the low frequency group transmission level in DTMF mode.

Ring On Detection Time

Default = 3.0 seconds

Set the minimum length of time incoming ring.

Ring Off Detection Time

Default = 3.0 seconds

Set the time to of the intervals between rings.

4-2-3 Changing Options

Press **MENU** and one-touch button 09 'OPTION.' Press ▼ or ▲ repeatedly to select the desired option. When the desired option appears, enter the number for that option to change the status of a selected function.

4-3 Test Mode

Test mode is used to test machine functions. Press MENU and one-touch button 05 'SELF-TEST.' Press ▼ or ▲ repeatedly to select the desired test item. When the desired test mode appears, press START.

4-3-1 Printer Test

This test checks printer mechanism function. Printer test pattern is printed out. See below.

If the diagonal lines are not broken, and the black (or color) bars are clear, the printer mechanism is functioning properly. A broken line shows any clogged nozzles, in which case the nozzle test should be run.

4-3-2 Ink Level Check

This test allows you to check the amount of ink remaining. The machine displays the amount of ink remaining as a series of blocks in the LCD—the more blocks, the more ink remains.

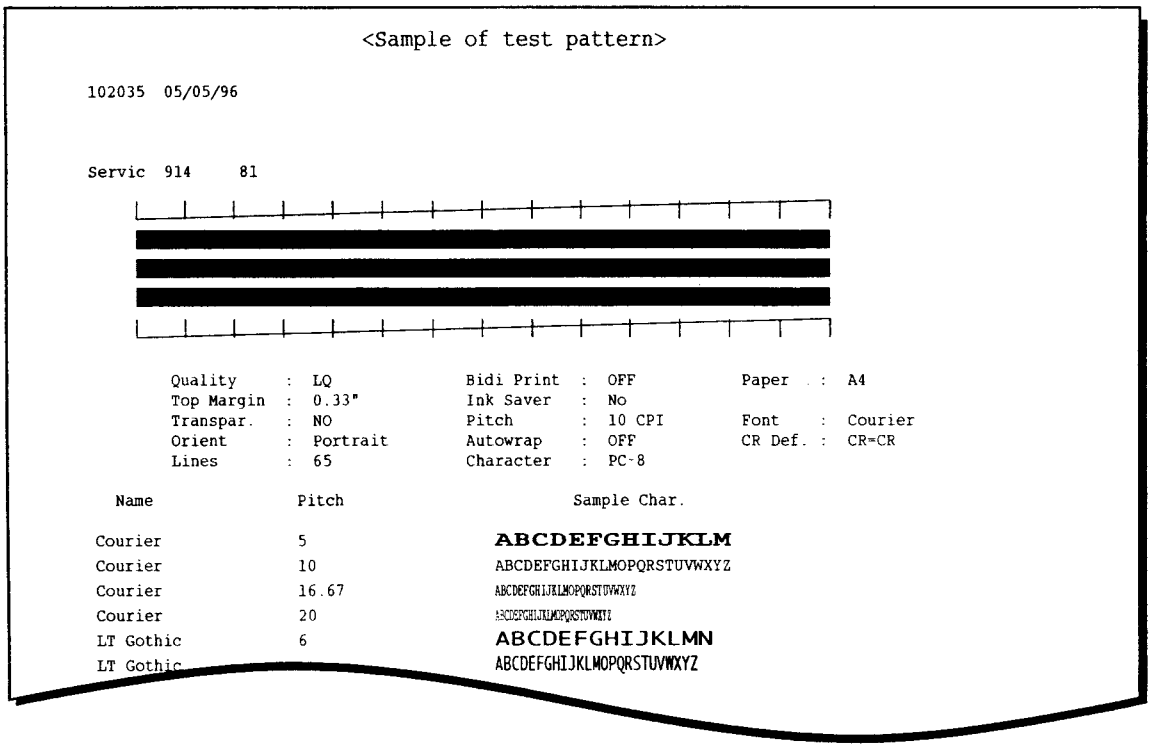


Figure 4-1 Printer Test Pattern

4-3-3 Nozzle Test

This test helps you pinpoint any clogged nozzles. The nozzle test also cleans the print cartridge by purging the nozzles. A test line prints so you can see if the purging process was successful.
Use the nozzle test:
-when you suspect the nozzles are clogged.
-when characters are not printing completely.
Examine the test pattern.

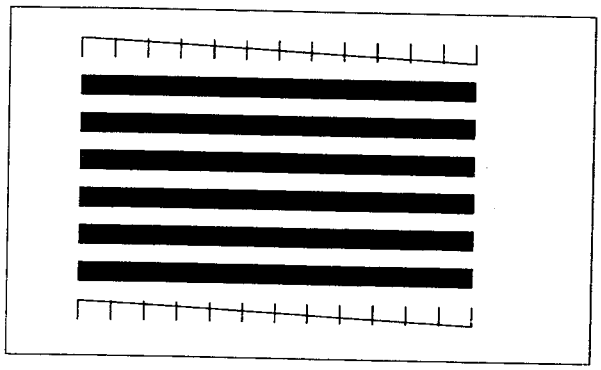


Figure 4-2 Nozzle Test Pattern

Compare the diagonal lines at top and bottom of the pattern. Look for a break in the diagonal line. A broken line shows any clogged nozzles.

If the bottom line shows improvement, rerun this test. If improvement continues, rerun the test again.

If print quality does not improve after running the test, remove and reinstall the print cartridge. If the line is still broken, wipe the nozzles and contacts.

How To Wipe the Nozzles and Contacts

If print is not clear and dots are missing, the problem may be caused by dried ink on the:
-print cartridge nozzles
-print cartridge contacts
-print cartridge carrier contacts in the printer.

1. Press the CARTRIDGE button on the control panel. The LCD displays 'CHANGE CARTRIDGE' and the print cartridge moves to the load position.
2. Unplug the power cord.
3. Open the control panel and slide up the top cover until it clicks.
4. While pushing the cartridge holder away from you, pull the print cartridge handle toward you, until it clicks. See the figure below.

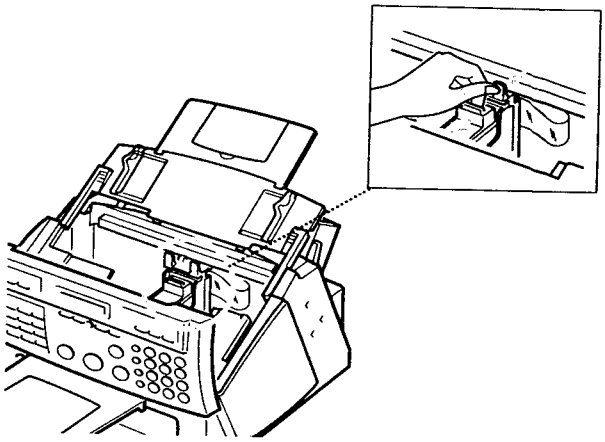


Figure 4-3 Removing Cartridge

5. Remove the print cartridge.
6. Use a clean cloth, dampened with water only, to gently clean the entire copper-colored area, including the nozzles and contacts. To dissolve any dried ink, hold the damp cloth against the nozzles for about three seconds. Gently blot and wipe dry.

   If you are cleaning a color print cartridge , be especially careful to wipe the nozzles in only one direction so the colors do not mix. Allow the copper-colored area to dry.

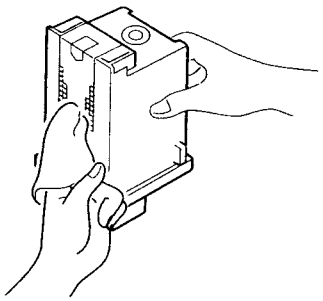


Figure 4-4 Wiping Contacts

7. Use a clean, dry cloth to clean the print cartridge carrier contacts inside the printer.

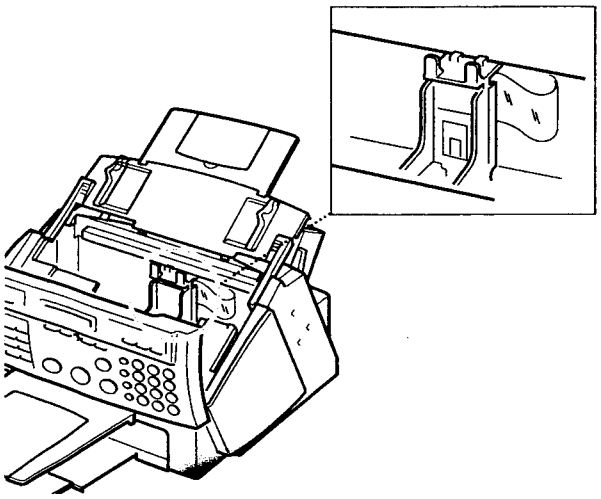


Figure 4-5 Cartridge Carrier Contacts

8. Plug the power cord in, reinstall the print cartridge, and replace the top cover and control panel.

9. Press the CARTRIDGE button. The LCD displays '1:NEW 2:USED.' Select '1:NEW' by using ◀ or ▶ or by pressing the 1 button, then press START/ENTER.

4-3-4 NV RAM Check

You can check information on the printer with the printer memory dump list.

4-3-5 Printer Reset

This mode allows you to reset the printer.

4-3-6 Scanner Test

You can check the scanning elements of the CIS (Contact Image Sensor) and print a shading waveform graphically with dots.

4-3-7 Modem Test

The modem will transmit various signals on the telephone line to check the following:

- FSK
- tones: 462 Hz, 1100 Hz, 1650 Hz, 1700 Hz, 1850 Hz, 2100 Hz, 2425 Hz
- G3 training: 9600, 7200, 4800, 2400 bps

4-3-8 ROM Test

Tests machine ROM (Read Only Memory). The result and the software version appear in the LCD in the following format:

ROM TEST OK !
CHKSUM= XX/VXX

4-3-9 Key Test

Tests the keys on the control panel. Each time you press a key, the LCD displays the test result.

4-3-10 Memory Dump Test

Prints all information stored in the machine's memory (SRAM).

4-4 Report Printout

The fax machine can be print reports containing useful information-standby job, option setting, etc. The following reports are avaliable:

4-4-1 Selectable Reports

CONFIRMATION REPORT

This report can be printed on command or, by selecting the appropriate user option.

STANDBY JOB LIST

This list shows the currently stored documents for delayed or polling transmission. The list shows the operation number, starting time, type of operation, etc.

TELEPHONE NUMBER LIST

This list shows all of the numbers currently stored in the fax machine's memory as One-Touch Dial numbers, Speed Dial numbers, and Group Dial numbers.

OPTION LIST

This list shows the status of the user-selectable options. After you change the settings, print this list to confirm your changes.

HELP LIST

This list shows the machine's basic functions and commands to use as a quick reference guide. You can also use the function menu to remind you how to set a particular function and which buttons to press.

PROTOCOL DUMP LIST

This list is available in the service mode only, and shows the sequence of the CCITT group 3 T.30 protocol during the most recent TX or RX operation. You can check for send and receive errors with this list.

a communication error occurs while the machine is in service mode, the protocol list will print automatically.

MULTI-COMMUNICATION REPORT

This report is printed out automatically after sending your document to more than one location.

CALL BACK MESSAGE

This report is printed out automatically when you do not respond to a remote operator's Voice Request.

POWER FAILURE REPORT

This report is printed out automatically when power is resupplied after a sudden power failure. This report shows erased data (if any) by the power failure.

4-4-2 How To Print Reports

1. Press the MENU button.
2. Press the desired list button.

   One-touch buttons 11-17 are assigned to 'PRINT LIST' functions.

   One-touch 11 : TX.CONFIRMATION REPORT
   One-touch 12 : STANDBY JOB LIST
   One-touch 13 : DIAL NO. (telephone numbers) LIST
   One-touch 14 : OPTION LIST
   One-touch 16 : HELP LIST
   One-touch 17 : PROTOCOL DUMP LIST

4-5 LCD Display

4-5-1 During communication

In user mode, the LCD shows the remote machine's TTI number, TX or RX communication type, (modem speed), and page number.

In service mode, the display shows the communication type, abbreviations for the CCITT Group 3 T.30 protocol as they occur, the protocol type (G3), baud rate in kbps, and scan line time.

4-5-2 If a communication problem occurs:

In user mode, the display shows one of the following:
PAPER JAM, SEND ERROR, or RECEIVE ERROR.

In service mode, the display shows all error messages available in user mode, as plus additional error messages available only in Service Mode.

Error messages shown in service mode only are as follows:

PRE-MESSAGE ERROR: problem occurred during phase B of session
MESSAGE ERROR: problem occurred during phase C of session
POST-MESSAGE ERROR: problem occurred during phase D of session
LINE ERROR: machine cannot connect or has lost connection with the remote machine

5. Circuit Description

5-1 General

The main circuit board consists of memory, MODEM, TX- and RX-related circuitry, printer and PC interface circuit and the Integrated Facsimile Controller (IFC), which includes the CPU and I/O device drivers and controls the system.

5-2 Memory Map

The external memory of the CPU is divided into 32kB RAM (0000H through 7FFFH) and 256kB ROM (FC0000H through FFFFFFH) and 512kB DRAM (100000H through 17FFFFH).

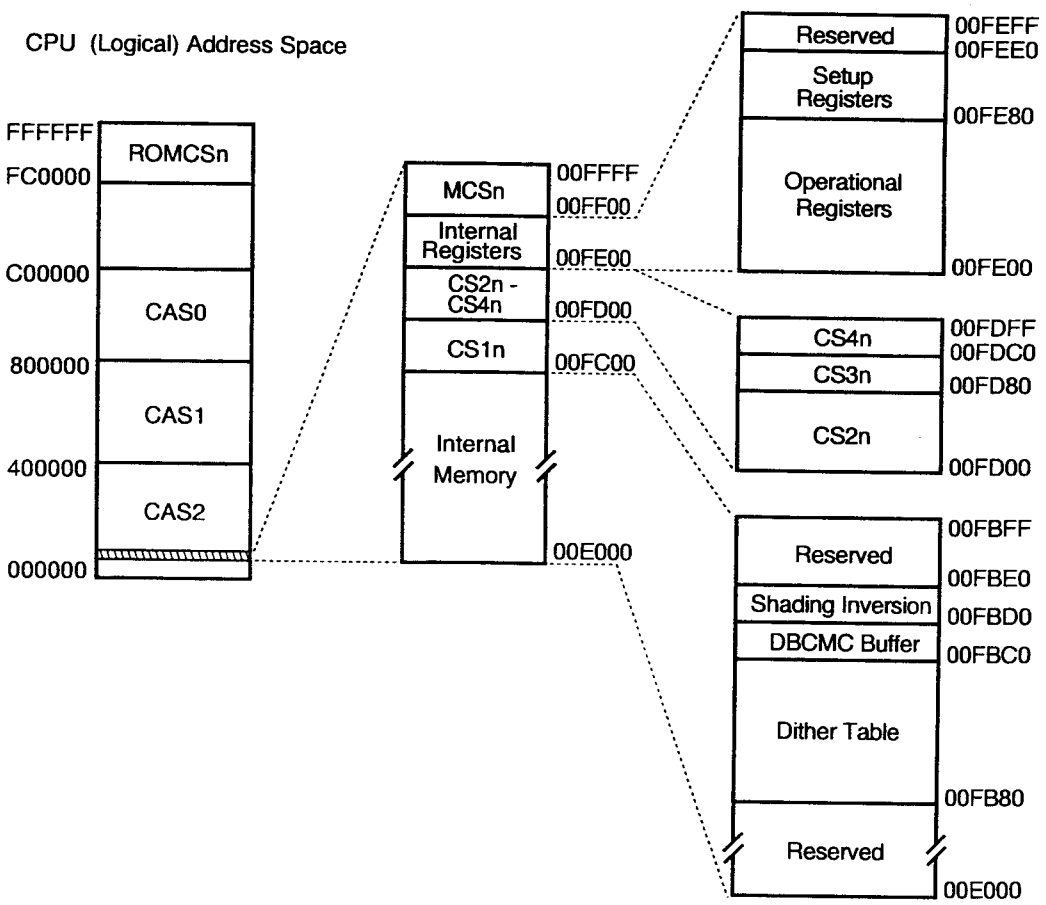


Figure 5-1: XFC-MVP Memory Map

5-3 IFC

The Integrated Facsimile Controller (IFC) circuit consists of system reset circuitry, Data and Address Bus, control panel communication, real time clock (RTC), image sensor, motor driver control, I/O ports, and DRAM controller.

5-3-1 Data & Address Bus Control

/RD and /WR signals are active in the low state, with the PH2 clock in a high state, and an internal wait state occurs in the TSTCLK (6 MHz). These signals are sent to the /RD and /WR ports of RAM , ROM, DRAM, and the MODEM in order to read or write data when a chip select line is active.

/CS0: RAM chip select active (low)
/ROMCS: ROM chip select active (low)
/DWR: DRAM write active (low)
/RAS: DRAM row address strobe active (low)
/CAS0: DRAM column address strobe 0 active(low)
/CAS1: DRAM column address strobe 1 active(low)
/CAS2: DRAM column address strobe 2 active(low)
/MCS: MODEM chip select active (low)
D0 - D7: 8 bit data buses
A0 - A15: address buses

5-3-2 System Clock

The 6 MHz internal clock frequency is derived by dividing the external 18 MHz system clock by three.

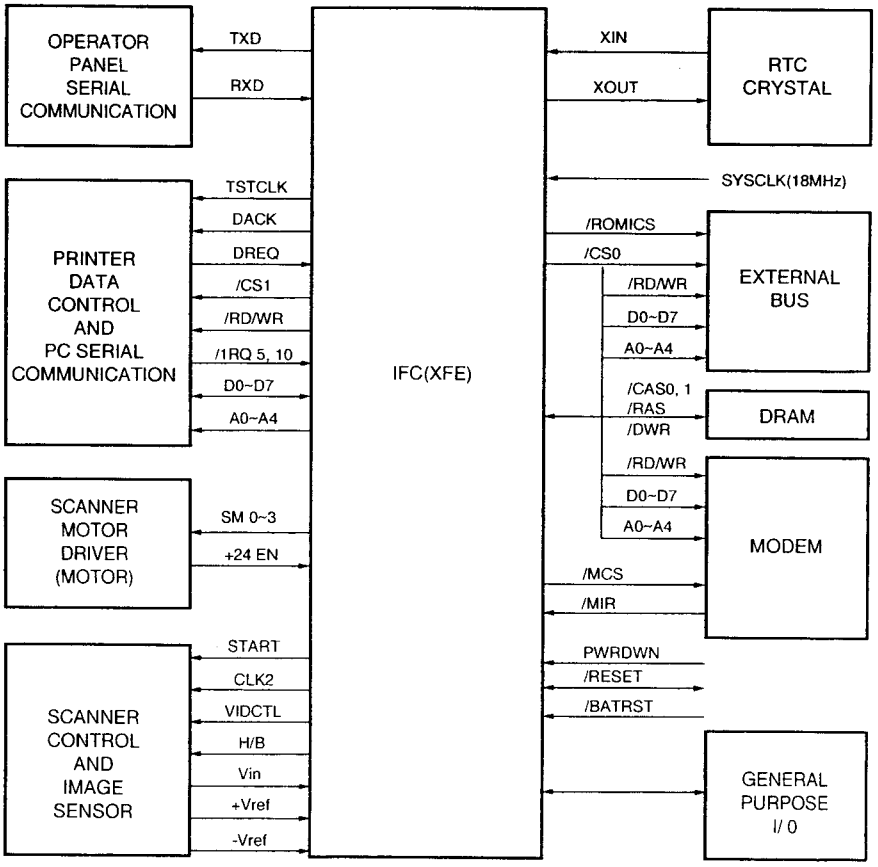


Figure 5-2: XFE-B Hardware Interface Signals

5-3-3 Real Time Clock (RTC)

This circuit receives clock pulses from an external 32.768 kHz crystal, which it divides into hours, minutes, seconds, year, month, and day.

A battery maintains operation when power is off. XFE can up-track 32 years, beginning with 1992.

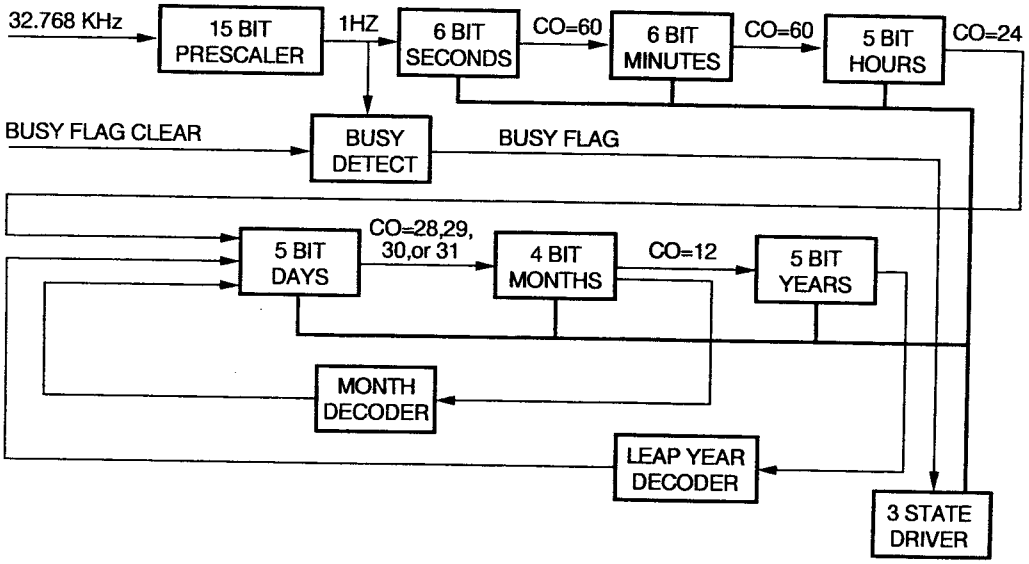


Figure 5-3: RTC Block Diagram

5-3-4 Operation Panel Control

A Synchronous/Asynchronous Receiver/Transmitter (SART) controls serial data transmission between the main circuit and the operator panel.

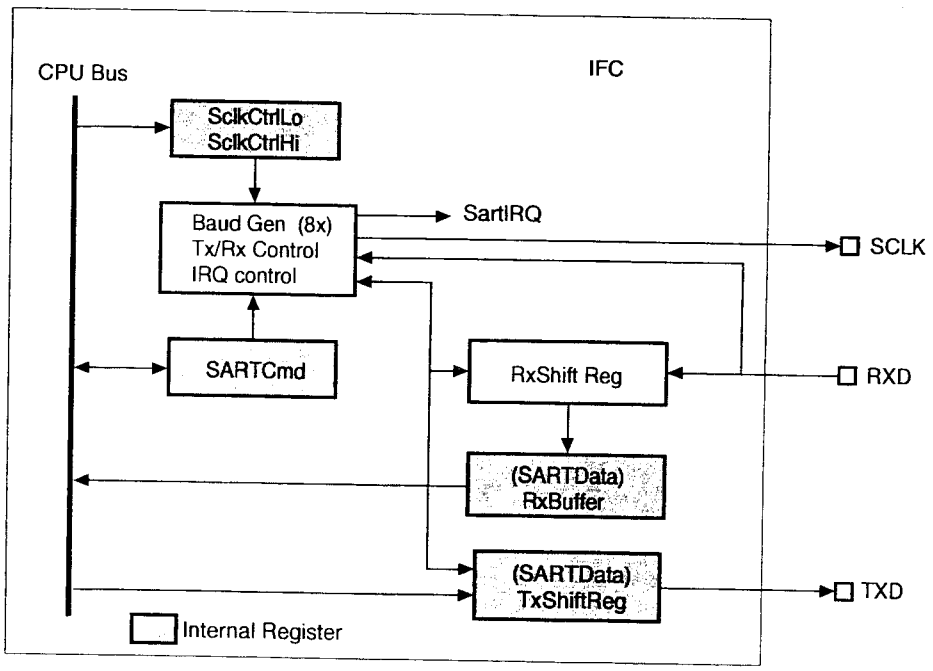


Figure 5-4: SART Block Diagram

5-3-5 Image Sensor

The shading wave is formed by scanning the white roller prior to a document. The slice level is determined by the shading wave, and compensates for shading distortion according to the CIS characteristics. The wave format from the CIS is converted into a 6 bit digital value in the IFC image processor, and then processed in B/W or intermediate mode.

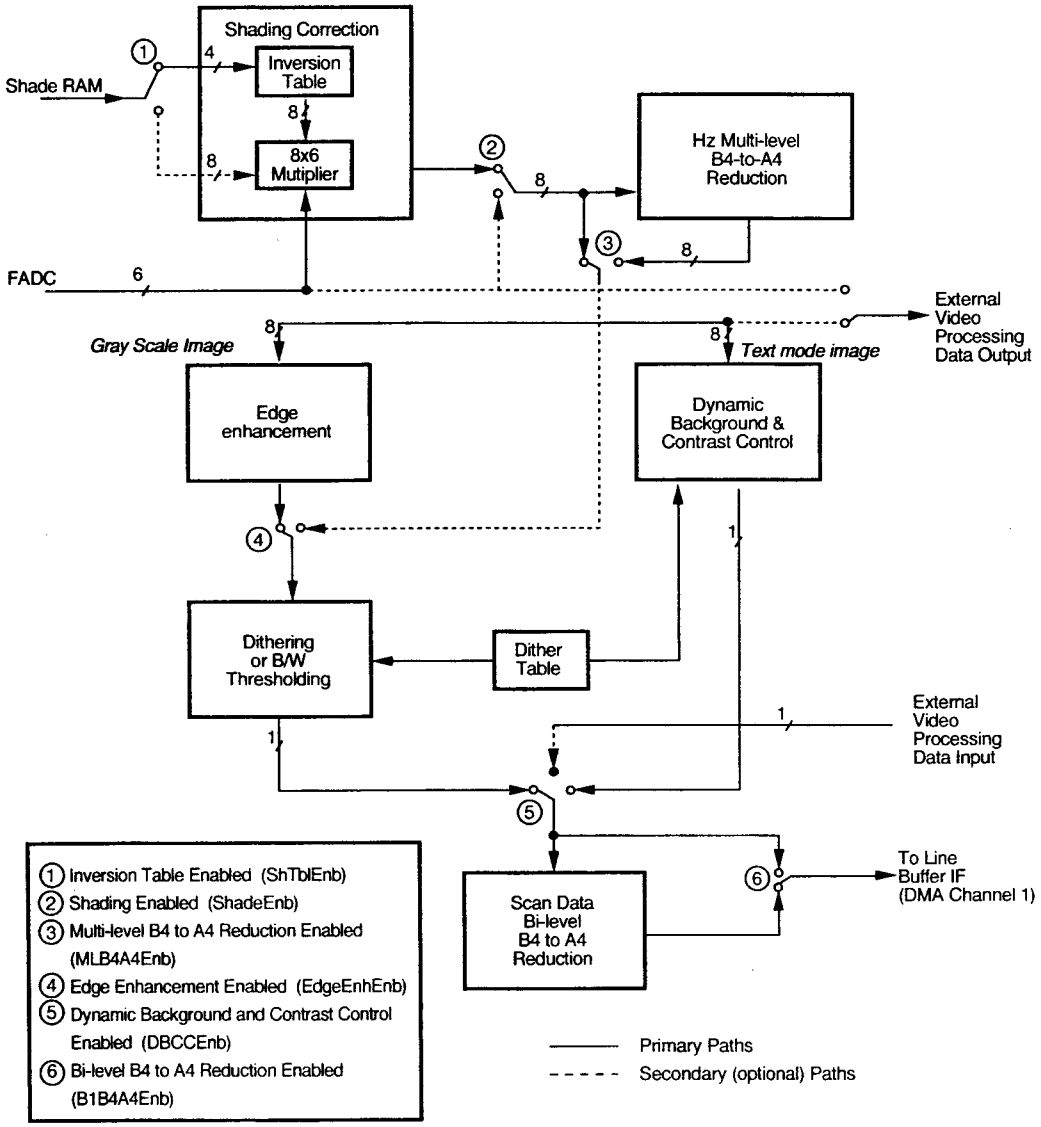

Shading Correction
Shade RAM
Inversion Table
8x6 Mutiplier
Hz Multi-level B4-to-A4 Reduction
FADC
External Video Processing Data Output
Gray Scale Image
Text mode image
Edge enhancement
Dynamic Background & Contrast Control
Dithering or B/W Thresholding
Dither Table
External Video Processing Data Input
To Line Buffer IF (DMA Channel 1)
Scan Data Bi-level B4 to A4 Reduction
1 Inversion Table Enabled (ShTblEnb)
2 Shading Enabled (ShadeEnb)
3 Multi-level B4 to A4 Reduction Enabled (MLB4A4Enb)
4 Edge Enhancement Enabled (EdgeEnhEnb)
5 Dynamic Background and Contrast Control Enabled (DBCCEnb)
6 Bi-level B4 to A4 Reduction Enabled (B1B4A4Enb)
Primary Paths
Secondary (optional) Paths

Figure 5-5: Scanner Image Processing Block Diagram

5-3-6 CIS Input Processor

To process the B/W input signal, maximum (+V_{REF}) and minimum (−V_{REF}) values of the CIS input signal are controlled by calibrating VIDCTL1 and HT_*BIN in the high state for the maximum level, and setting them to sround for the minimum level. Processing to compensate for CIS shading distortion is controlled with VIDCTL1 and HT_*BIN 'high'. For B/W mode, VIDCTL1 should be 'high', and HT_*BIN 'low'. For half-tone, VIDCTL1 is 'low', and HT_*BIN is 'high'.

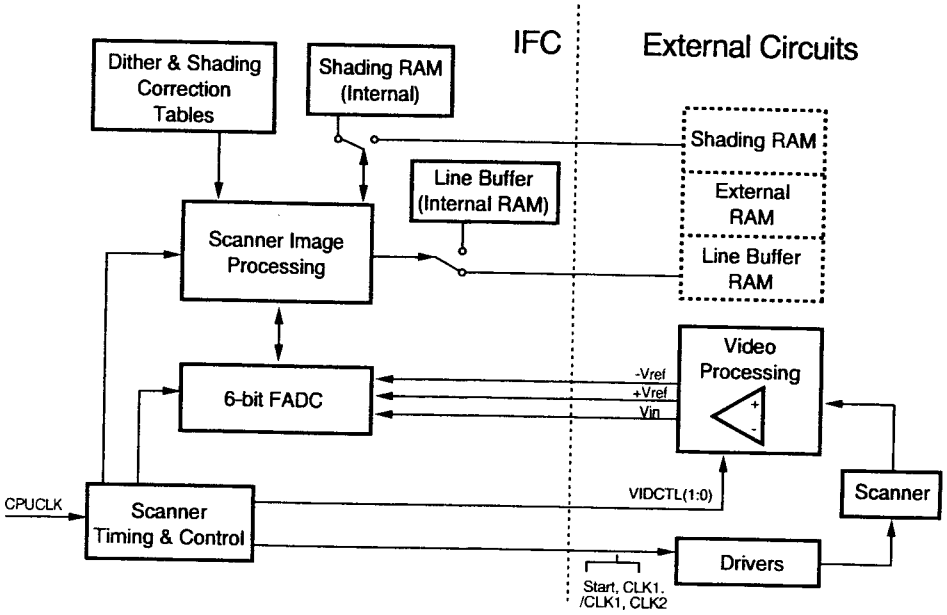


Figure 5-6: Scanner Interface Block Diagram

5-3-7 CIS Driver

The CIS driver clock frequency is 500 kHz. A low duty cycle of 75% is used to lengthen the charging time. A start signal is provided every 5 ms to match the line scanning time. Actual image signal is provided in less than 3.4 ms, bascdon A4 paper size, and using the 500 kHz clock.

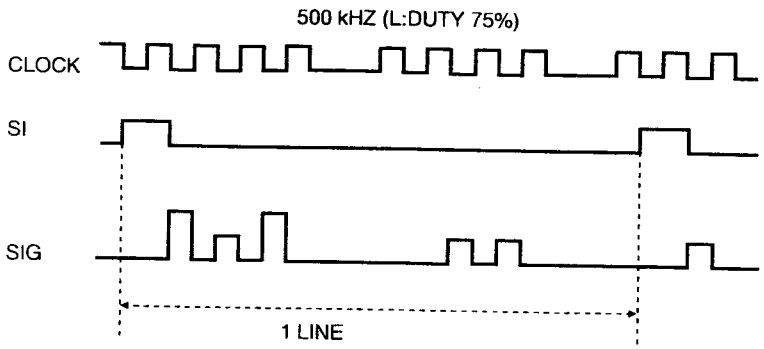


Figure 5-7: CIS Driver Clock Timing

5-3-8 Scan Motor Controller

The FX4000/4100/4200 model facsimile machines perform send functions utilizing a single 24 volt motor. This motor has a winding resistance of 60 ohms. Three drive strobe pulses are used to operate the motor.

Motor Function	Drive Strobe Pulse	Phase
Quick Scan	400 pps	2-phase
Document Feed In/Out	400pps	2-phase

5-3-9 Miscellaneous Signals

The key click consists of an 800 Hz tone, 20 ms in duration.

/RESET drives MODEM /PORI and serves to reset the MODEM.
/MIRQ is the MODEM interrupt signal.

5-4 Reset

Two power resets and a watchdog timer in the IFC comprise the elements of this circuit. Battery power reset (/BATRST) is used to initialize the battery-powered logic, and primary power reset (/PWRDWN) initializes non-battery-powered logic when system power is supplied.

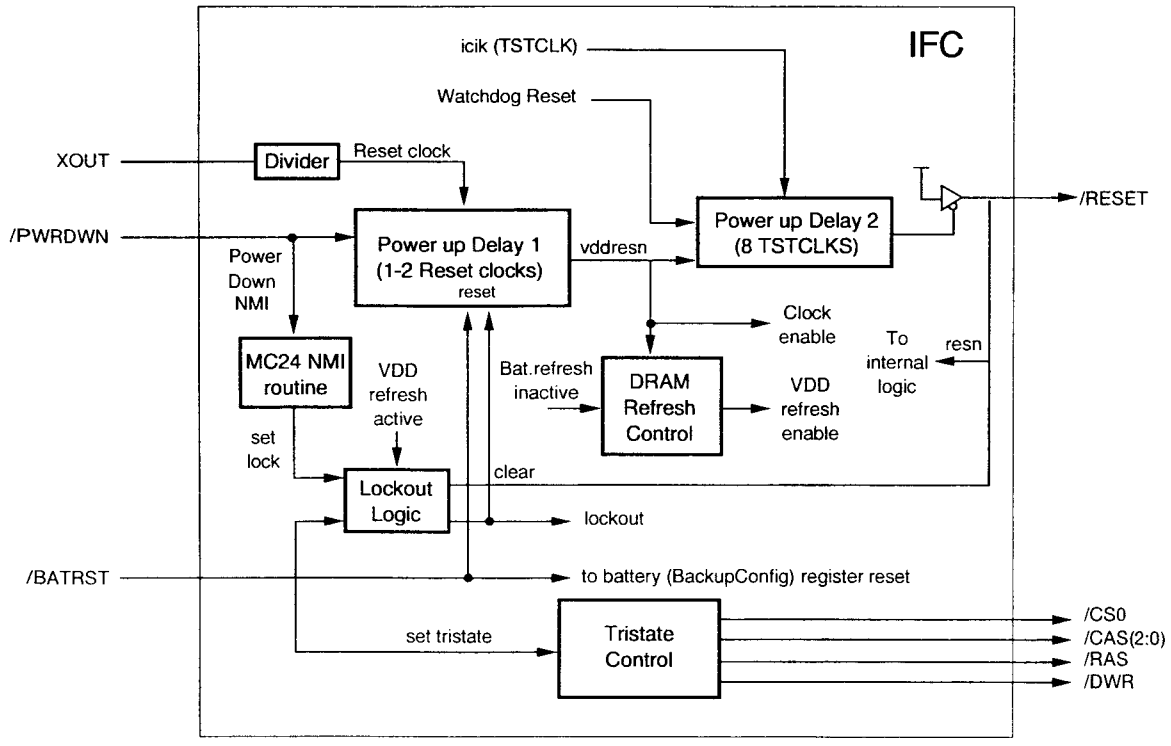


Figure 5-8: Power Reset Block Diagram

5-4-1 Power Monitor

If 5V power to U17 pin 1 drops to between 4.65 and 4.35V (typically 4.5V), power failure will be indicated and the output of U17 (pin 3) will go 'low' (GND). This causes the IFC to become active ('low'=reset). The IFC reset causes the MODEM IFC/RESET terminal to be reset. The output terminal of U17 is an open-drain configuration, and is connected to IFC through a 10k pull-up resistor.

5-4-2 Watch Dog Timer

This programmable counter in the IFC is reset every 2 ms. If not reset after 250 ms, the system is automatically reset and switches to initialize mode.

5-4-3 Battery Power Reset

When battery power (VBAT) is first applied to IFC, VBAT current results in /BATRST going 'low', causing a reset to occur.

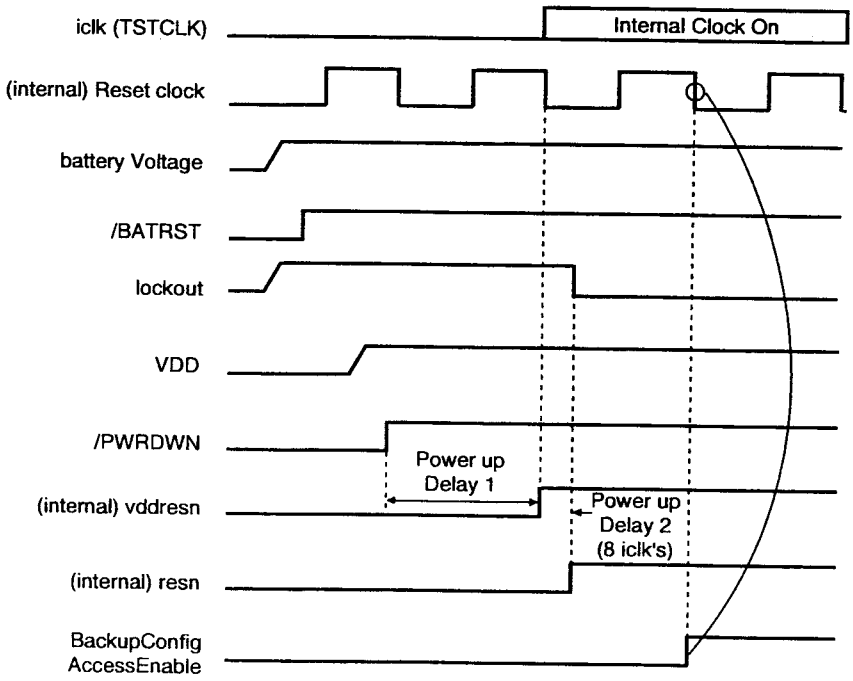


Figure 5-9: Power Reset Timing Chart

5-5 Memory

System memory consists of 256kB ROM and 32kB RAM. All of RAM is backed up. ROM and RAM are selected by chip select lines, and data is accessed by the units position of the byte.
+5V power is applied to RAM through VB. This model facsimile machine uses a lithium battery. A 330ohm resistor in series with the positive battery terminal is for battery protection.

5-6 Modem and TX- and RX- Related Circuits

These circuits control signal transmission between the internal MODEM and the LIU or a remote MODEM. The R96DFXL MODEM is a single-chip fax-MODEM having features to detect and generate DTMF tones. TX OUT is the MODEM output port, and RX IN is the input port. /PORI is the IFC signal which enables MODEM initialization at system power on. D0 - D7 are the data bus. RS0- RS3 are internal register select signals which determine the mode. /CS is chip select, and /RD /WR are read and write control signals. RLSD is used for v.24 interface-related signals and /IRQ is the MODEM interrupt.

PIN NAME	CIRCUIT NAME	I/O	STATE	DESCRIPTION
GP2	N.C	I	-	-
GP3	N.C	I	-	-
GP4	N.C	I	-	-
GP5	N.C	I	-	-
GP6	N.C	I	-	-
GP7	N.C	I	-	-
GP11	H_TX	O	-	-
			-	-
GP13	H_RX	O	-	-
			-	-
GP16	N.C	I	-	-
GP17	N.C	I	-	-
GP19	MF_*DP	I	H	DP
			L	MF
GP20	OFFHOOK3	I	H	HANDSET ON HOOK
			L	HANDSET OFF HOOK
GP21	OFFHOOK2	I	H	EXT_TELEPHONE HOOK OFF
			L	EXT_TELEPHONE HOOK OFF

5-6-1 Transmit Circuit

This circuitry controls transmission of analog signals from the MODEM. Output voltage from the MODEM is buffered through the LIU board and OP amp after signal smoothing and filtering, and finally output to the line.

5-6-2 Receive Circuit

In receive mode, analog signals from the LIU board are transferred to RX IN through the BPF and smoothing filter.

5-7 OPE PBA

OPE PBA consists of U1 (MICOM Z8601), LCD, key matrix, LED indicators, and the document detect and scan position sensors. Refer to OPE Schematic Diagram and Wiring Diagram sections of this manual.

- Signals from the key matrix are delivered to U1 X/Y input pin group (P1-x).
- U1 pin 4 (TX DATA) is UART code to MAIN PBA.
- Display from controller is received at U1 pin 5 (RX DATA).
- LCD drive signals are U1 P2-x pin group, P3-4 ~ P3-6 pins.
- Machine status LED drive signals are U1 P0-x pin group.

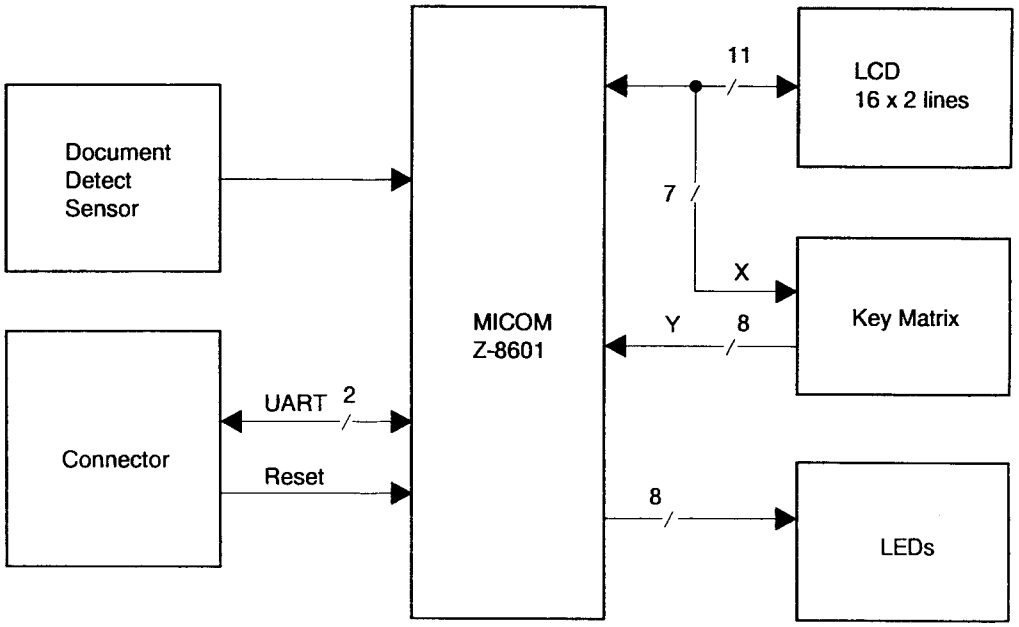


Figure 5-10 OPE Block Diagram

5-8 LIU PBA

5-8-1 FAX Section

K1 (CML relay):
K1 (CML relay) is operated by *CML1 signal pin 15 of U4 (TD62503: Main board) and connects the line to modem or telephone.

U4 (PLA110):
U2 (Photo Mos Relay) is operated by DP signal at pin 16 of U4 (TD62503: Main board) and the signal is transferred from pin 92 of U1 (XFC-MVP Main board) to create dial pulses.

U8 (PC814):
U8 pin 3 Line goes high when receiving ring and is sent to U1 pin 83 (Main PBA).

HIB1:
Matching the DTMF or CNG to line or EXT-Telephone

T1 (Transformer):
T1 is a matching transformer, and transfers line signal to either modem or telephone.

5-8-2 Telephone circuit

HOOK SWITCH

When the telephone handset is off-hook, U1 pin 85 goes high (Main PBA) and initiatesTEL modeusing H-TX and H-RX.

TRANSMIT PATH

- Handset dynamic microphone is filtered by R79, C69, and C68, and then amplified by U1 pins 7 and 8 (MIC−, MIC+).
- Ferrite beads BID1 and BID2 are RF filtering.
- U1 pin 1 (LN) is audio output to telephone line.
- Transmit audio transfer level control is U1 pins 2 and 3 (GAS1, GAS2) through C67 and R77.

RECEIVE PATH

- Receive audio from line is fed to U1 pin 18 (SLPE).
- Handset receiver audio is U1 pins 4 and 5 (QR−, QR+).
- C71, R81, and C72 are high frequency roll-off.
- Choke F4 and ferrite beads BID3 and BID4 are RF filtering.

Sidetone Circuit

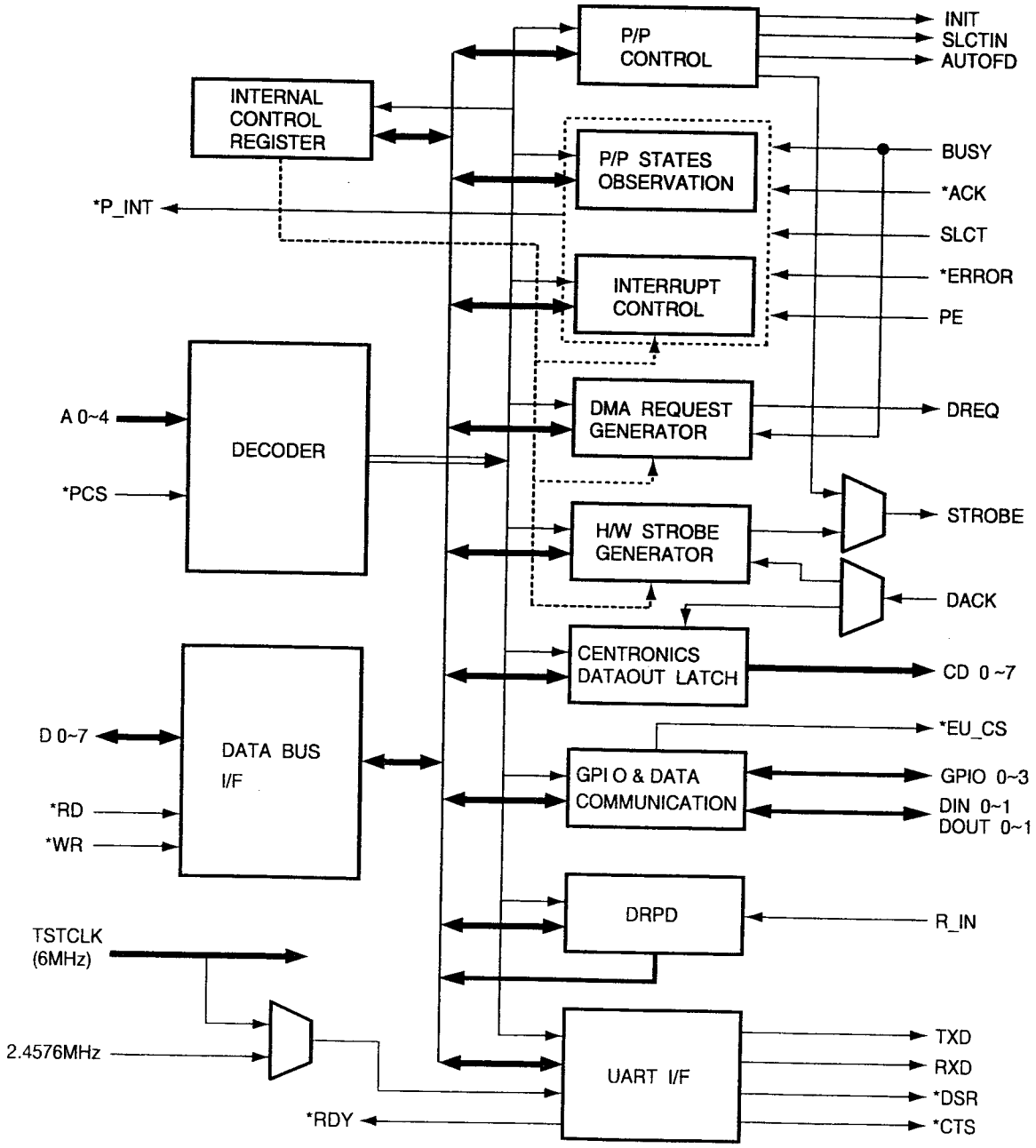
- Sidetone audio characteristics are controlled by R74, R75, and C66, connected to U1 pin 18 (SLPE).

5-9 Scan PBA

Scan PBA consists of the scanner motor driver U1, Q1, Q2, related circuitry, and motor power supply (+24V) relay. This PBA also connects RX cover open sensor, document scan sensor, and CIS to the control panel.

5-10 Print and PC Interface Circuit

5-10-1 Custom IC U24 Block Diagram

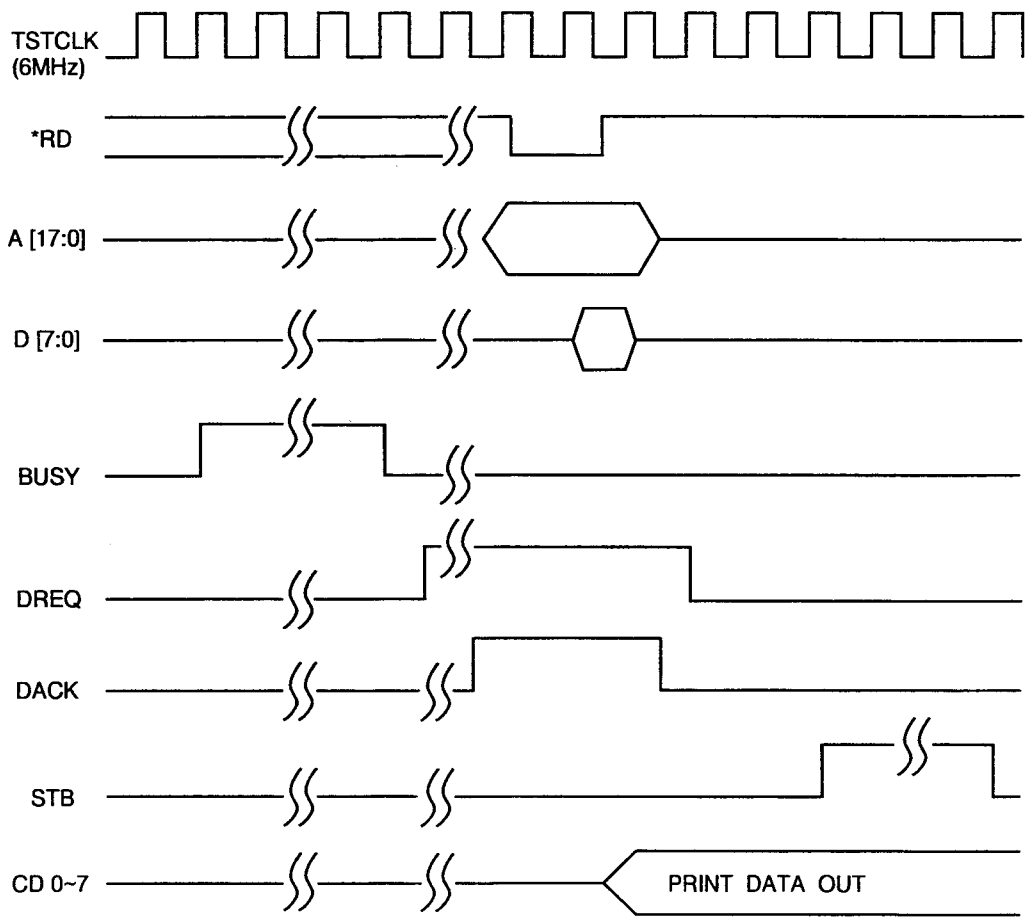


5-10-2 U25 IC Pin Assignment

FUNCTION	PIN NO	PIN NAME	DIR	ACTIVE	DESCRIPTION
PRINTER	32	*P_INT	O	L	PRINTER INTERRUPT
	34	DACK	I	H	DMA ACKNOWLEGE
	33	DREQ	O	H	DMA REQUEST
	19~12	CD[7:0]	I/O	-	PRINTER DATA
	6	PE	I	H	PRINTER PAPER ERROR
	7	*ERROR		L	PRINTER ERROR
	8	SLCT		H	PRINTER ON LINE
	9	*ACK		L	PRINTER DATA ACKNOWLEGE
	10	BUSY		H	PRINTER BUSY
	21	STB	O	H	PRINTER DATA STROBE
	22	INIT		H	PRINTER INITIALIZATION
	23	SLCTIN		H	PRINTER SELECTION
	24	AUTOFD		H	PRINTER AUTO LINE FEED
	5	DIN0	I	-	PRINTER STATE
	4	DIN1	I	-	CONNECTION CHANNEL STATE
	2	DOUT0	O	-	FAX REQUEST (NORMAL)
	1	DOUT1	O	-	FAX REQUEST (QUICK)
	63	*PRT_RST	O	H	PRINTER RESET
PC INTERFACE	31	*DSR_IN	I	CLK	UART CLOCK (2.4576MHz: NOT USED)
	29	*DSR_IN	O	L	UART INTERRUPT
	56	*DSR_IN	O	-	PC TX DATA
	59	*CTS_IN	I	-	PC RX DATA
	62	CST_SW	I	L	DATA SET READY
	64	CST_SW	I	L	CLEAR TO SEND
RING DET.	3	CST_SW	I	H	RING SIGNAL INPUT

FUNCTION	PIN NO	PIN NAME	DIR	ACTIVE	DESCRIPTION
CPU INTERFACE	48~45	D[7:4]	I/O	-	CPU DATA
	43~40	D[3:0]	I/O	-	
	35	A4	O	-	CPU ADDRESS
	39~36	A[3:0]	O	-	
	50	*RD	O	-	CPU READ STROBE
	51	*WR	O	-	CPU WRITE STROBE
	52	PPCLK	I	CLOCK	DEVICE MAIN CLOCK (TSTCLK: 6MHz)
	54	*PCS	I	L	DEVICE SELECTION
	55	*PPRST	I	L	DEVICE RESET
I/O PROT	26	GPIO0	I/O	-	GENERAL PURPOSE INPUT/OUTPUT
	27	GPIO1	I/O	-	
	61	GPIO2	I/O	-	
	57	GPIO3	I/O	-	
EXT.PORT	28	*EU_CS	O	L	EXETERNAL OUTPUT PORT SELECTION
TEST	20	TEST_EN	I	H	DEVICE TEST PIN
POWER	25	VDD1	I	-	+ 5V POWER SUPPLY
	49	VDD2	I	-	
	60	VDD3	I	-	
GROUND	11	GND1	I	-	DIGITAL GROUND
	30	GND2	I	-	
	44	GND3	I	-	
	53	GND4	I	-	
	58	GND5	I	-	

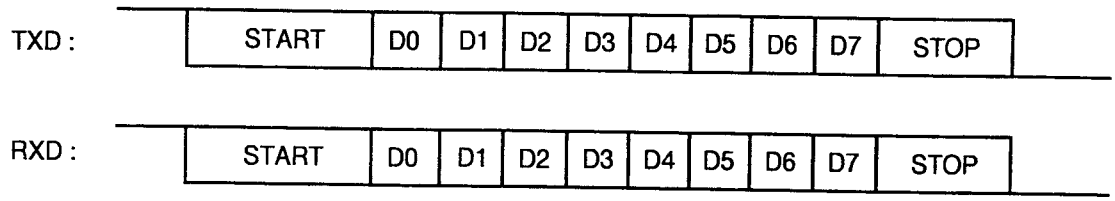
5-10-3 External DMA and Print Data Timing



If there is no busy signal from the printer, PRINT data is transferred with STROBE signal, which then generates a busy signal. While this busy signal exists, the printer controls data signal. The busy signal is disabled when the print operation finishes. IFC external DMA is used to transfer the next printer data.

The timing diagram above shows the relation between U1 and U25 send and receive data. When busy is disabled, DREQ signal is output to U1 from U25 to transfer the next data, and U1 sends printer data to the bus with DACK signal. Then U25 send the data with STROBE signal to the printer.

5-10-4 U25 UART Function (PC Interface)



STOP	: 1bit
BAUD RATE	: 19.2K, 9600, 4800, 2400
BAUD RATE CLK	: 6 MHz or 2.4576 MHz
CPU I/F	: Interrupt and polling are supported in TX and RX
BUFFER	: 3 Buffer
COM. MODE	: Full-duplex

5-10-5 Print Channel Control

Print channel MUX U22, U27, and U30 are used to transfer the printer control signal and print data to facsimile or PC. The table below shows MUX control;

Control / State	Control Port Name	
	*CH_F	*CH_P
Idle	H	L
Fax → Printer	L	H
PC → Printer	H	L

5-11 Print Circuit

Print circuit is composed of a CPU (U1H), carrier motor driver, line feed motor driver, head nozzle driver, sensor, reset circuit, and EEPROM driver. MC68EC000 CPU has a 16 bit data bus and operates at 10 MHz. 8-bit mode is selected for this circuit.

5-11-1 CPU (MC68EC0000)

PIN NO.	NAME	DIR.	DESCRIPTION
1	R/W	Output	Read and Write High=Read Low=Write
2	DTACK	Input	Memory or I/O data receiving end Active Low
3	BG	Output	Bus enable for another device Active Low
4	BR	Input	Bus request for another device Active Low
5	Vcc		+5V
6	CLK	Input	10MHz rectangular wave signal
7	GND		
8	MODE	Input	8-bit or 16-bit mode selection High=16 bit Low=8 bit
9	HALT	Bi-direction	Low signal input with CPU initialized. Low signal output with CPU stopped. Active Low
10	RESET	Input	System initialize Active Low
11	AVEC		not used
12	BERR	Input	not used
13-15	IPL0-2	Input	Interrupt level input
16-18	FC0-2	Output	CPU function code output
19-44	A0-23	Output	Address bus
45-61	D0-15	Bi-direction	Data bus
56	GND		
62	AS	Output	Address strobe Active Low
63	UDS	Output	Upper data strobe: upper 8-bit data bus (D8-D15) active Active Low
64	LDS	Output	Lower data strobe: lower 8-bit data bus (D0-D7) active Active Low

5-11-2 System Clock

CPU uses a 10 MHz square wave system clock. The 20 MHz resonator divides the clock generated by two in memory through pin 13 and pin 14 (OSC 1 and 2).

5-11-3 Reset Circuit

The output signal from pin 13 of U5 (LM339) with +5V and +24V power applied is the POWER ON RESET.

5-11-4 Carriage Return Motor Driver

The CR motor drives the head in two directions to print data on the recording paper.

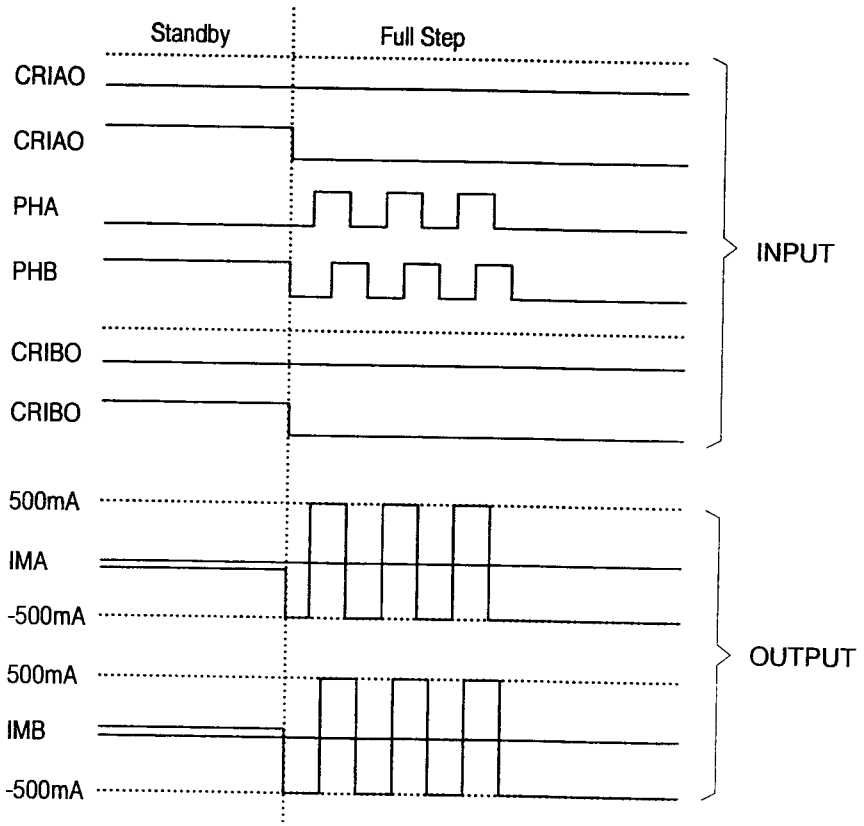
Motor type : Step Bipolar

Operating Voltage : +24V DC

Resistance : 5 ohm +/-10%

IC : PBL3717 x2

STEP MOTOR DRIVER OUTPUT SIGNAL



5-11-5 Line Feed Motor Driver

The LF motor drives paper through yhe machine.
Motor type : Step Unipolar
Operating Voltage : +24V DC
Holding Voltage : +5V DC
Resistance : 70 ohm +/-10%
IC : STA471A

As LFEN goes high, Q3 (2222A) and Q4 (TIP127) turn on. +24V is applied to the common terminal of the motor, and the motor drives when a motor phase is input. When LFEN goes low, Q3 (2222A) and Q4 (TIP127) turn off. +5V through D4 (1N4002) is applied to the common terminal to maintain the motor holding torque.

5-11-6 Head Nozzle Driver

The nozzle control circuit is composed of the following:
Number of nozzle : 56 nozzles for mono, 48 nozzles for color
Drive Voltage : +24V DC +/-2%
Drive Pulse Width : 2.6 us for mono, 2 us for color
Operating Frequency : 5 kHz
Resistance : 30 ohm for mono, 28 ohm for color
IC : SGS Thomson L6451 or Allegro A5817

The IC decodes four input signals (PHINA, PHINB, PHINC, PHIND) and, in conjuntion OEA and OEB, enable an output line.

IND	INC	INB	INA	N
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
0	1	0	1	5
0	1	1	0	6
0	1	1	1	7
1	0	0	0	8
1	0	0	1	9
1	0	1	0	10
1	0	1	1	11
1	1	0	0	12
1	1	0	1	13
1	1	1	0	ALL OFF
1	1	1	1	ALL OFF

5-11-7 Sensor Detection Circuit

PE SENSOR 1, 2

This photo sensor detects when paper is loaded in the automatic sheet feeder. If no paper is detected, the output signal goes high. While paper is feeding, the output is low.

HOME DETECTION CIRCUIT

This circuit detects whether the head is in home position. When power is on and head is capped, and in home position, the output is high, and out of home position the output is low.

5-11-8 EEPROM Driver

The serial EEPROM is 256 x 8 bit memory and is used to store the printer default settings, and to track the ink cartridge level.

MEMO

6. Theory of Operation

6-1 Scanner Mechanism

The scanner mechanism consists of components which feed, scan, and eject documents to be copied or transmitted. These components and their functions are explained below.

6-1-1 Automatic Document Feeder (ADF) Mechanism

The automatic document feeder, consisting of various rollers, ADF rubber pad, and springs, automatically separates and feeds the pages of a document over the scanning area and stacks them on the document exit tray.

Documents containing up to 30 pages can be placed in the automatic document feeder for scanning. The leading edge of the document will move the document detect sensor lever when the operator slides the document stack into the ADF. The scan motor starts to rotate when the document detect sensor has detected the leading edge of the document. The ADF roller feeds the first page of the document into the feeder, then moves the page to the scan position.

The scan motor is stopped when the leading edge of the page actuates the document scan sensor.

ADF rubber prevents multiple sheets from being picked. A spring provides a force that the pad places on the document pages for proper separation.

The scan motor is again turned on when the machine is ready to scan the document, and drives the feed roller at a speed determined by the selected resolution. The scan motor is stopped after a set period of time after the trailing edge of the page leaves the document scan sensor. If another page is detected while the tailing edge of the page leaves the document scan sensor, the next page will be fed to the scan position. The exit roller pushes the page out onto the document exit tray where it is stacked.

6-1-2 Contact Image Sensor (CIS)

The contact image sensor unit consists of LEDs, rod lens array, and a photo sensor. The LEDs illuminate the document to be scanned when the leading edge is detected by the document scan sensor. The LEDs turn off when the document exits the scanner mechanism.

The LEDs illuminate the document to obtain a reflected image from the document, through the rod lens array, where it is translated into voltage levels.

6-1-3 Document Sensors

There are two document sensors in the scanner mechanism; document detect and documentscan. The document detect sensor detects whetheror not a document is loaded, and the document scan sensor detects the scan position of the document.

6-2 Print Mechanism

The print mechanism consists of the carriage mechanism, paper feed mechanism, home ass'y, and sensors.

6-2-1 Paper Feed Mechanism

This mechanism consists of the automatic sheet feeder to pick up the paper and feed to print, and the line feed ass'y and feed roller ass'y to move the recorded paper and eject the paper to printer exit.

When paper is loaded, the line feed motor rotates in reverse, and the feed roller and ASF roller rotate counter to each other. The ASF roller moves paper to the feed roller (see figure 6-1).

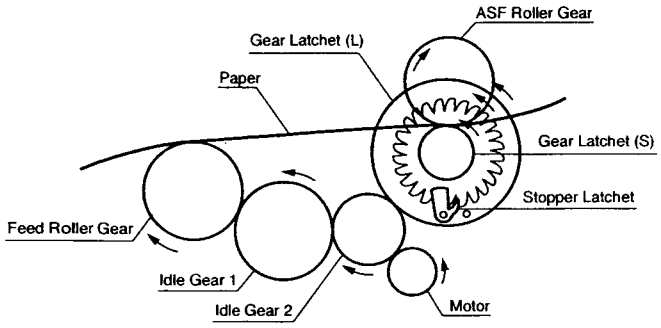


Figure 6-1

The paper detect sensor in the feed path activates and makes the line feed motor rotate in reverse (clockwise). The feed roller moves loaded paper to the printer and the ASF roller is in idle status (see figure 6-2).

When the edge of the paper exits from the feed roller, the paper detection sensor makes the line feed motor to rotate in reverse direction (counter-clockwise). This procedure is repeated.

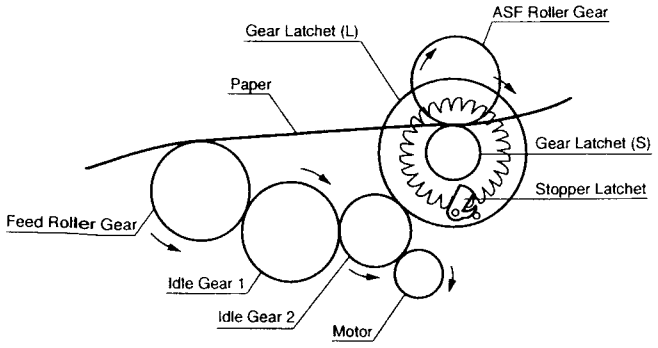


Figure 6-2

6-2-2 Home Ass'y

The home ass'y consists of the cap and wiper. The cap protects the ink nozzle when the printer is in standby or the power is off. The wiper is used to clean nozzle when paper is loaded or when printing. The components are operated mechanically when the carriage moves.

When the carriage moves to the right, the carriage stopper protects the ink nozzle, and the wiper moves up to clean the nozzle (see figure 6-3, 6-4).

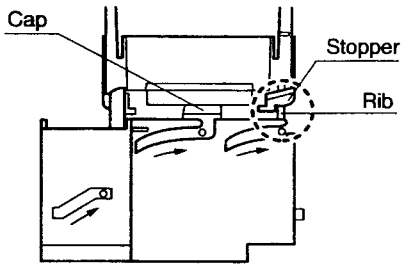


Figure 6-3

When the carriage moves to the left by receiving an external signal, the the wiper cleans the ink nozzle, and the carriage stopper pushes down the rib of the home ass'y, placing the home ass'y in standby mode (see figure 6-4. 6-5).

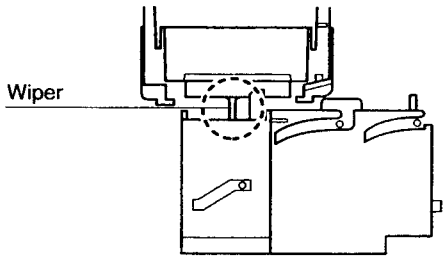


Figure 6-4

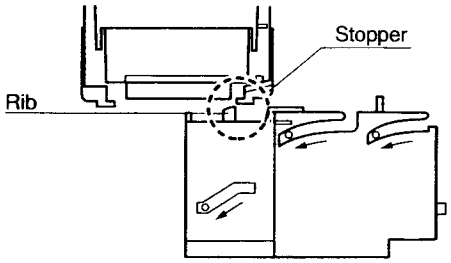


Figure 6-5

7. Disassembly and Reassembly

7-1 General Precautions on Disassembly

When you disassemble and reassemble components, use extreme caution. The close proximity of cables to moving parts makes proper cable dress and routing a must. If components are removed or replaced, any cables disturbed by the procedure must be restored as close as possible to their original positions. Before removing any component from the machine, note the cable routing that will be affected.

Whenever servicing the machine, you must perform the follows:

1. Verify that no documents are stored in memory. Check this by printing the Delayed Dial List. Press [MENU], [6], [YES], [YES], sequantially.
2. Move the print cartridge to far right to avoid nozzle blocking.
3. Unplug the power cord.
4. Use a flat and clean surface.
5. Replace with only authorized components.
6. Do not force open or otherwise stress a plastic components.
7. Be careful no foreisn objects are included when you reassemble components.
8. When you assemble components, in sure that small components are propoerly located.

7-2 Scanner Section

7-2-1 Scan Unit

1. Open the control panel by hand, slide the top cover up completely, and take it out.

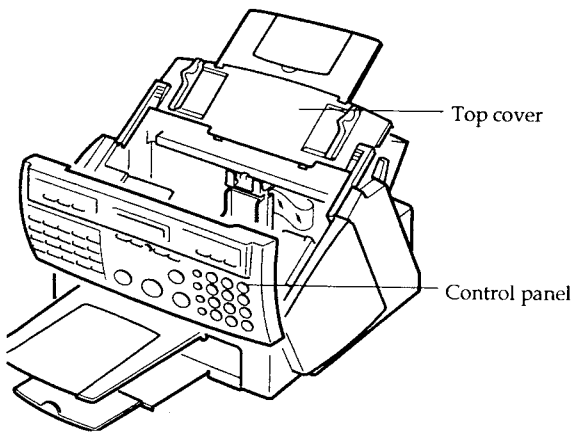


Figure 7.1

2. Remove the two screws.

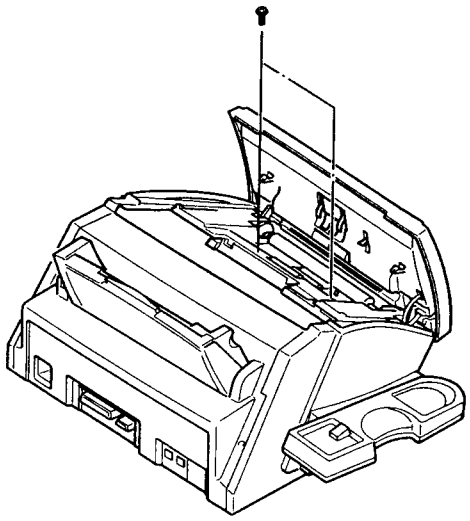


Figure 7.2

3. Pull off one end of the tie stopper to disconnect the control panel. Before pulling off, turn it 90 degrees.

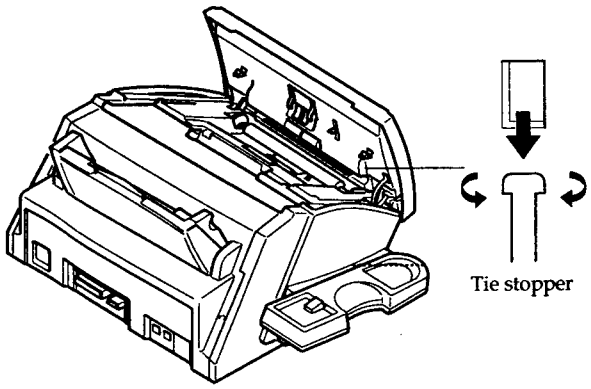


Figure 7.3

4. Rotate the scan unit slightly toward the front of the machine to release the front end tabs from the front cover, and take out the scan unit.

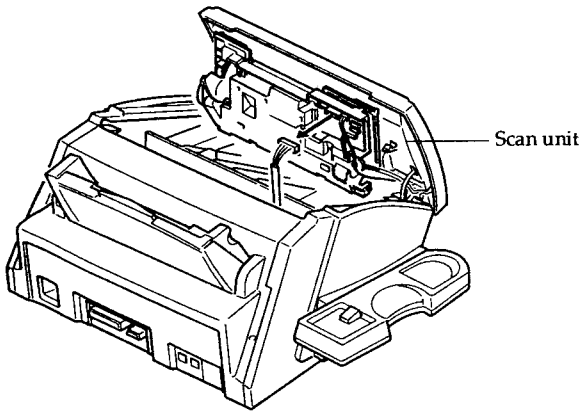


Figure 7.4

5. Unplug the connector from the main PBA.

7-2-2 White Roller Ass'y

1. Open the control panel by hand.

2. Push the bushings on either ends of the roller slightly inward, then rotate until reaching the slot, as shown in the figure below. Then take out the roller.

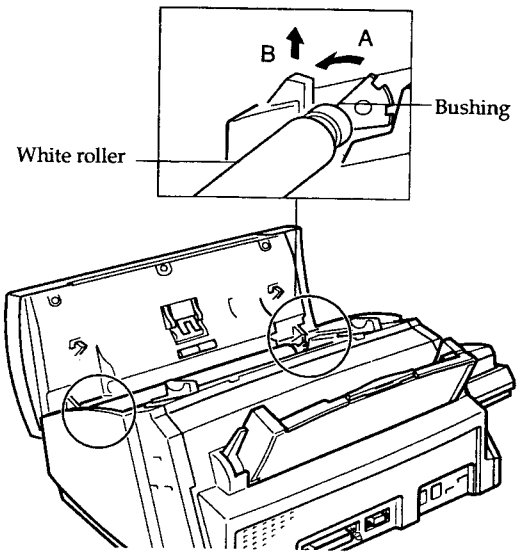


Figure 7.5

Note :
Check the roller for stains. If stained, wipe it off with a soft cloth dampened with alcohol. If the roller is heavily worn, replace it.

7-2-3 ADF Rubber Pad

1. Open the control panel by hand.

2. Insert a minus driver into the slot in the figure below and remove the rubber as shown in the figure below.

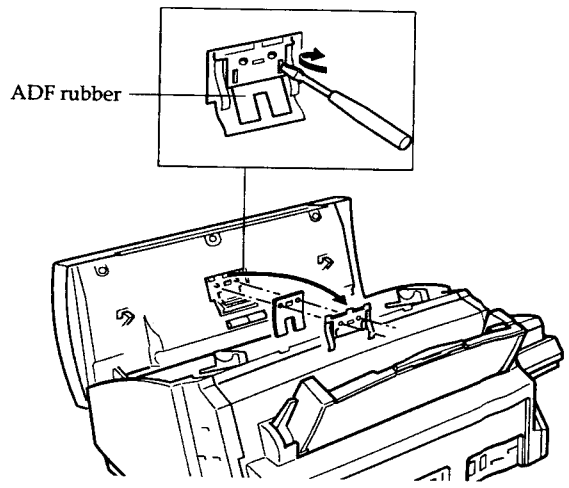


Figure 7.6

Notes :
When you reassemble the pad, be sure that the rubber pad and holder fit into the guide boss, and the holder tabs fit into the corresponding holes. Then push firmly until they click.

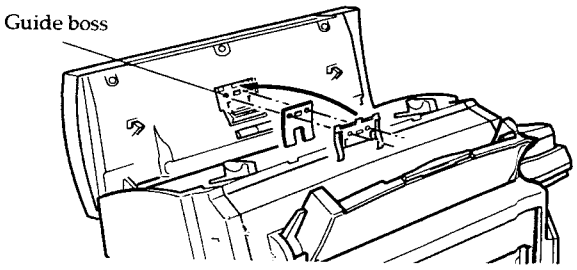


Figure 7.7

Clean the surface of the rubber pad with ethyl alcohol. After wiping it, be sure to dry completely with a soft cloth. Check the rubber wear. If the wear reaches 1/2 its original thickness, replace

7-2-4 OPE Unit

1. Remove the scan unit as described in '7-2-1 Scan Unit.'
2. Turn the scan unit over and place on a soft cloth to avoid the scratching the surface.
3. Unplug the OPE connector from the scan PBA and remove the grounding screw.
4. Open the OPE cover completely to separate the OPE unit from the scan unit, as shown in figure 7.9.

   The OPE unit has tabs on the bottom end that secure it to the scan unit. When you take out the OPE unit, make sure the bottom end tabs are released from the scan unit. See figure 7.10.

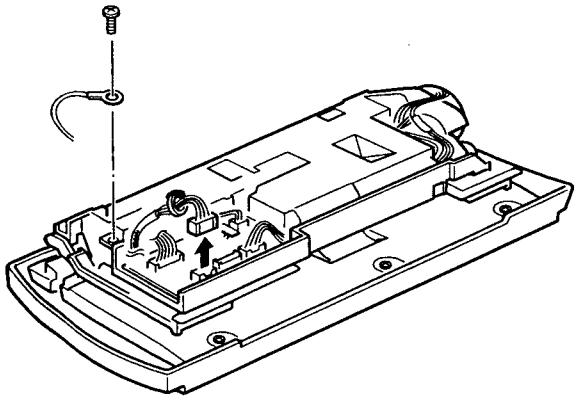


Figure 7.8

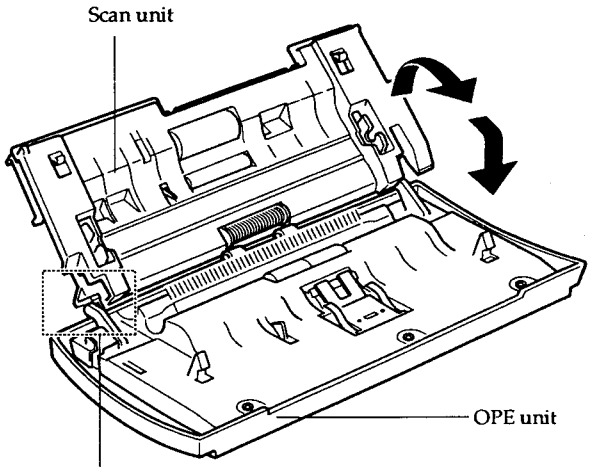


Figure 7.9

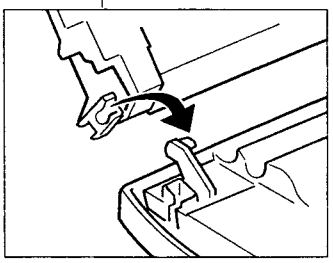


Figure 7.10

7-2-5 CIS

1. Remove the scan unit and white roller as described in '7-2-1 Scan Unit' and '7-2-2 White Roller Ass'y', respectively.

2. Turn the scan unit over. Unplug the connector from the scan PBA and remove the grounding screw.

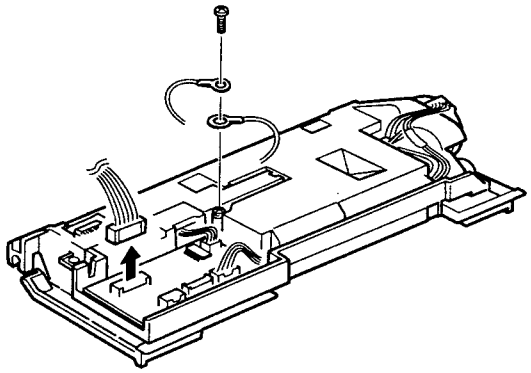


Figure 7.11

3. Turn the scan unit right side up and remove the two screws securing the scan paper guide. Take out the scan paper guide.

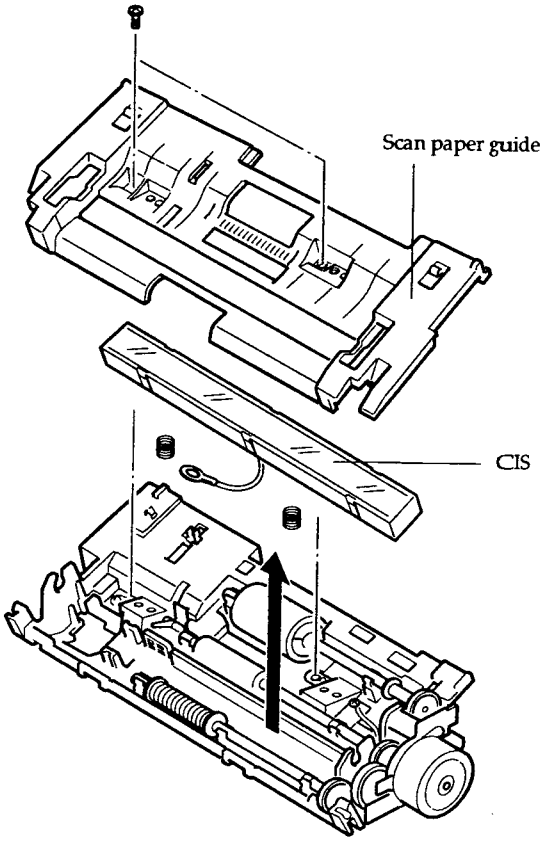


Figure 7.12

Note : When you assemble the scan paper guide, make sure the tabs in the guide fit in place.

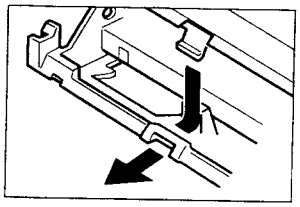


Figure 7.13

4. Take out the CIS.

Note : Check the glass surface of the CIS for stains or scratches. If stained, wipe off with ethyl alcohol. If heavily stained or scratched, replace.

7-2-6 Rollers (ADF Roller, Feed Roller, D.Exit Roller)

1. Remove the scan unit, white roller, and OPE unit as described in '7-2-1 Scan Unit', '7-2-2 White Roller Ass'y', and '7-2-4 OPE Unit' respectively.

2. Remove the two screws securing the scan paper guide. Take out the scan paper guide.

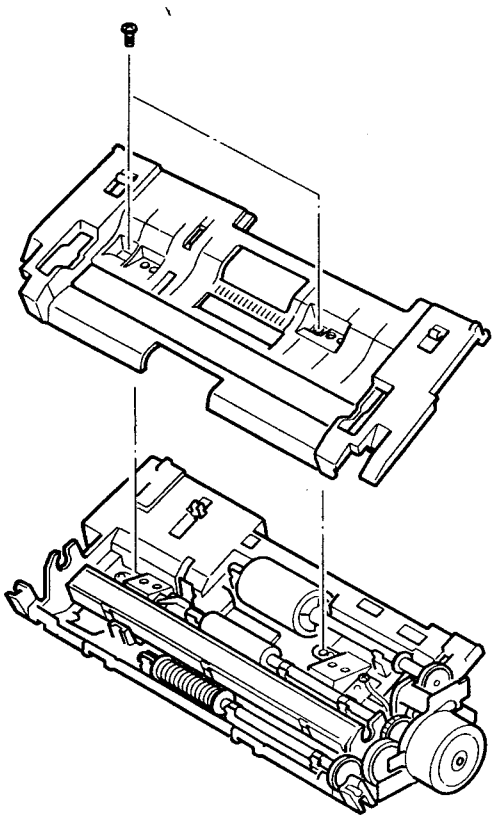


Figure 7.12

3. Remove out the rollers from the frame.

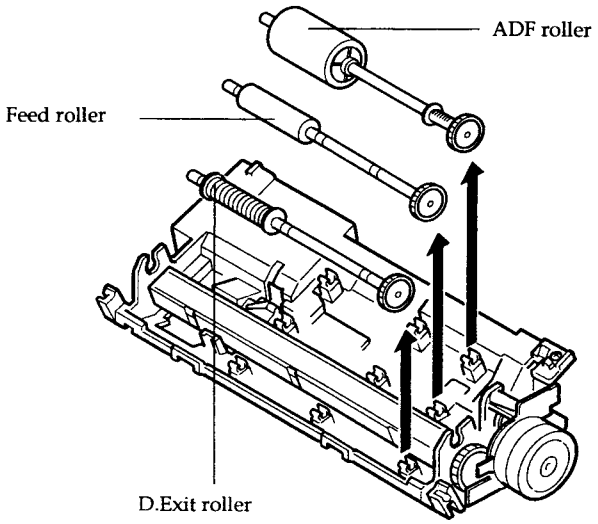


Figure 7.14

Note : Clean the surface of the rollers with ethyl alcohol. After wiping them, be sure to dry completely with a soft cloth.

7-2-7 Document Scan Sensor

1. Remove the scan unit, white roller, OPE unit, and CIS as described in '7-2-1 Scan Unit', '7-2-2 White Roller Ass'y', '7-2-4 OPE Unit', and '7-2-5 CIS' respectively.

2. Turn the scan unit over, unplug the two connectors from the scan PBA, and remove the ground screw.

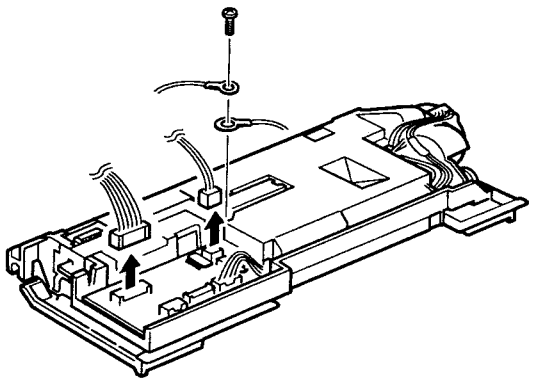


Figure 7.15

3. Turn the scan unit back. Remove the two screws securing the scan paper guide and take out the scan paper guide.

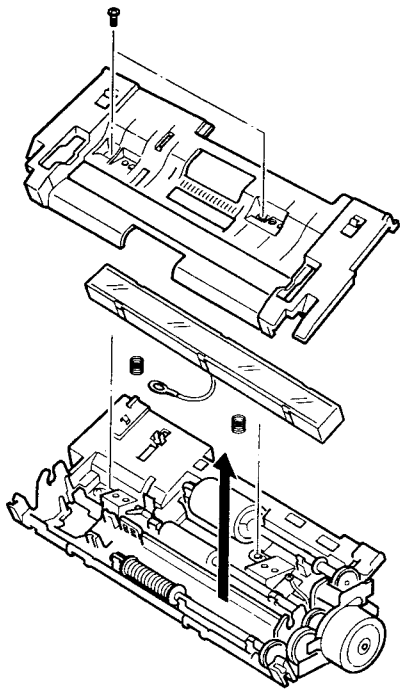


Figure 7.12

4. Take out the document scan sensor (direction B) while pressing it in direction A.

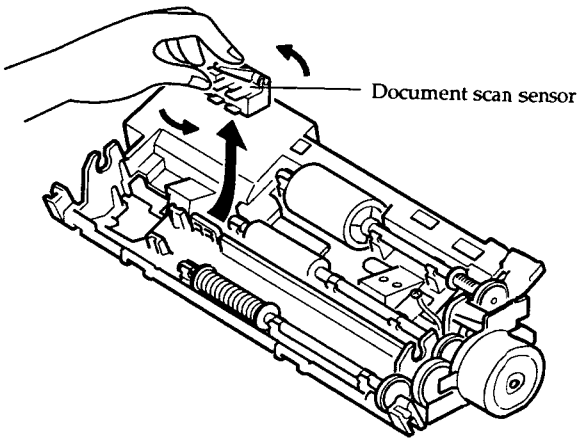


Figure 7.16

7-2-8 Scan Motor

1. Remove the scan unit, white roller, and OPE unit as described in '7-2-1 Scan Unit', '7-2-2 White Roller Ass'y', and '7-2-4 OPE Unit' respectively.

2. Turn the scan unit over and unplug the motor connector from the scan PBA.

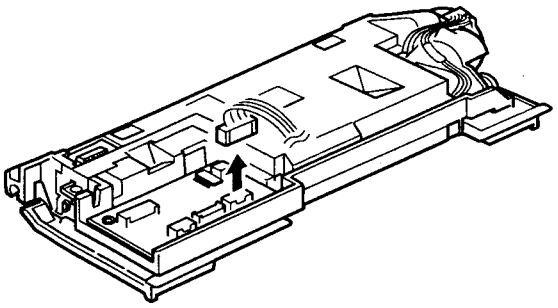


Figure 7.17

3. Turn the scan unit back. Remove the two screws and take out the scan paper guide.

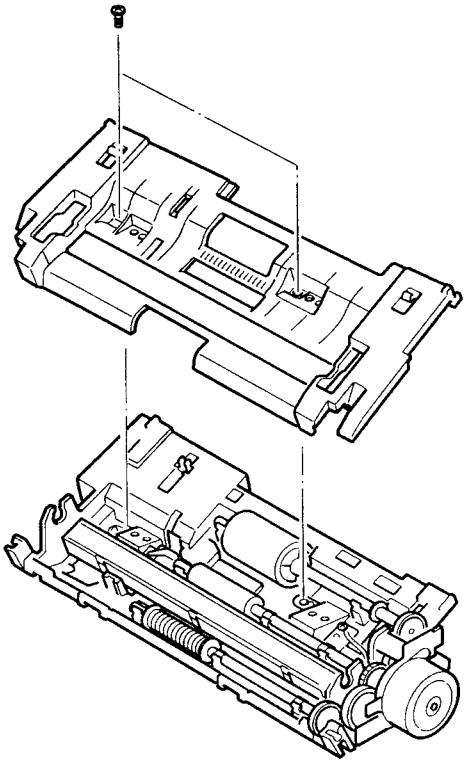


Figure 7.18

4. Remove the three screws and take out the motor ass'y.

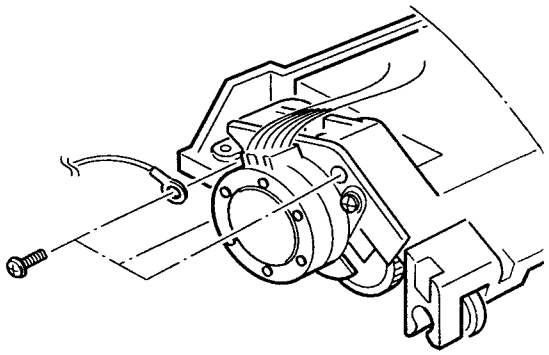


Figure 7.19

5. Remove the two screws securing the motor to the motor bracket.

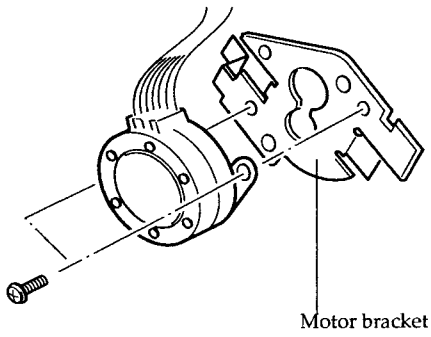


Figure 7.20

7-2-9 Pinch Roll

1. Remove the scan unit and OPE unit '7-2-1 Scan Unit' and '7-2-4 OPE Unit' respectively.
2. Remove the three screws from the OPE unit.

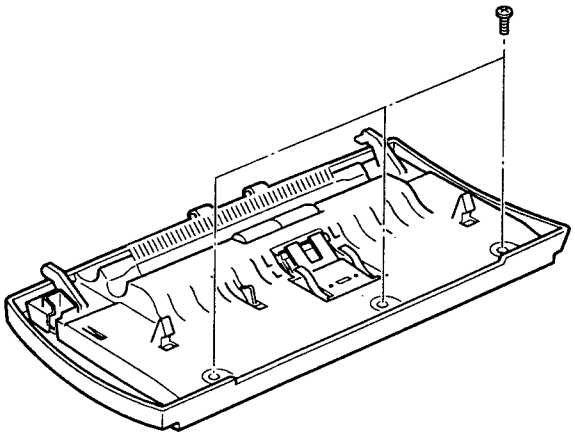


Figure 7.21

3. Turn the OPE unit over.
4. Remove the three screws and take out the pinch spring. The pinch roll will separate.

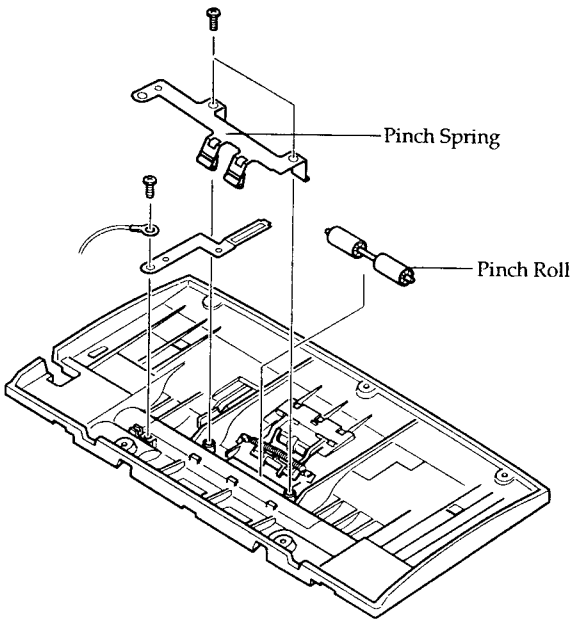


Figure 7.22

7-2-10 Scan PBA

1. Remove the scan unit as described in '7-2-1 Scan Unit.'
2. Turn the scan unit over and unplug all connectors from the scan PBA.

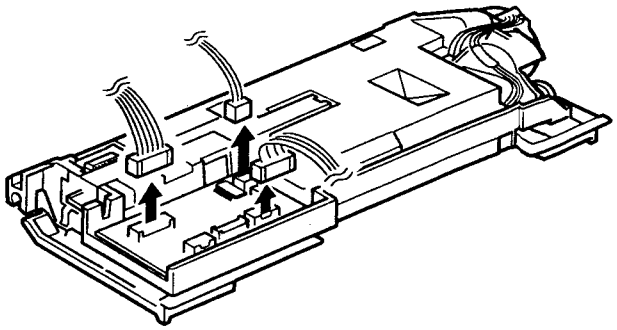


Figure 7.23

3. Remove the two screws securing the scanPBA and take out the PBA.

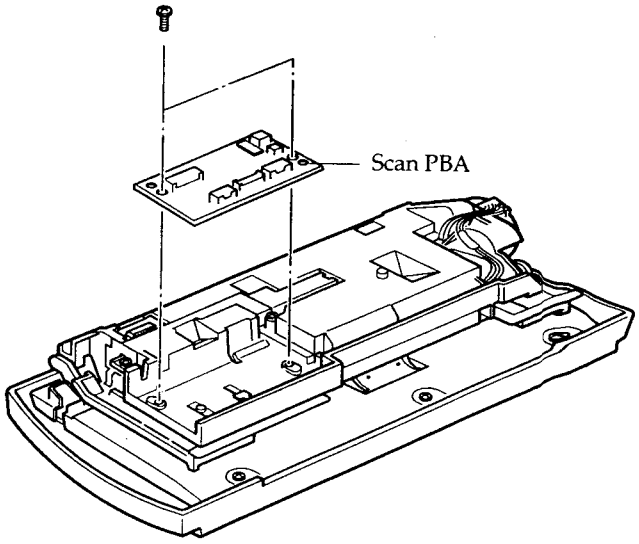


Figure 7.24

7-2-11 OPE PBA

1. Remove the scan unit and OPE unit as described in '7-2-1 Scan Unit' and '7-2-4 OPE Unit' respectively.

2. Remove the three screws in the OPE unit to separate the scan upper frame, as shown.

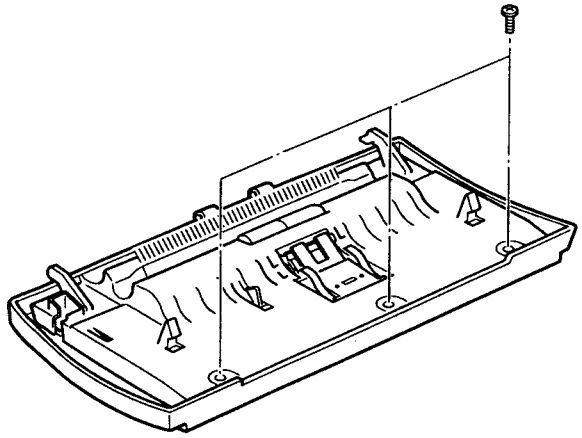


Figure 7.25

3. Remove the eighteen screws as shown, and take out the PBA and the LCD.

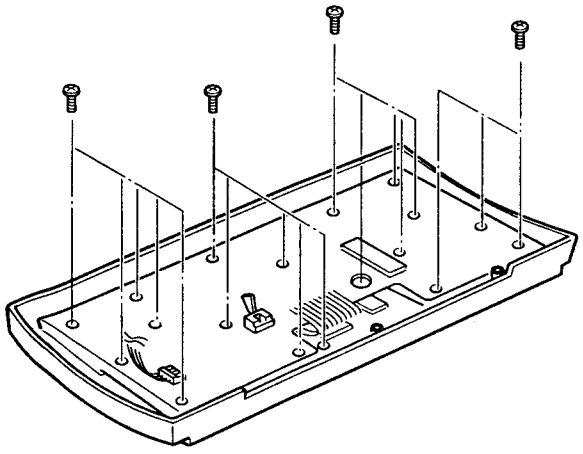


Figure 7.26

Notes:
- Do not turn the OPE unit upside down after removing the screws securing the PBA. Keys and rubber contacts may separate and might be lost.
- When you assemble the OPE unit, make sure the keys are in correct position so as not to make improper contacts.
- When you assemble the PBA, secure the screws according to the order of the number printed on the PBA.
- After assembling, operate the machine to make sure it works properly.
- After assembling, make sure there are no foreign objects caught in the LCD.

7-3 Covers

1. Remove the scan unit as described in '7-2-1 Scan Unit.'

2. Remove the six screws (FX40xx models, four screws) and pull up the rear cover to take it out in the direction of arrow. The rear cover has tabs secured to the main frame, so make sure the tabs are released properly when you take out the cover.

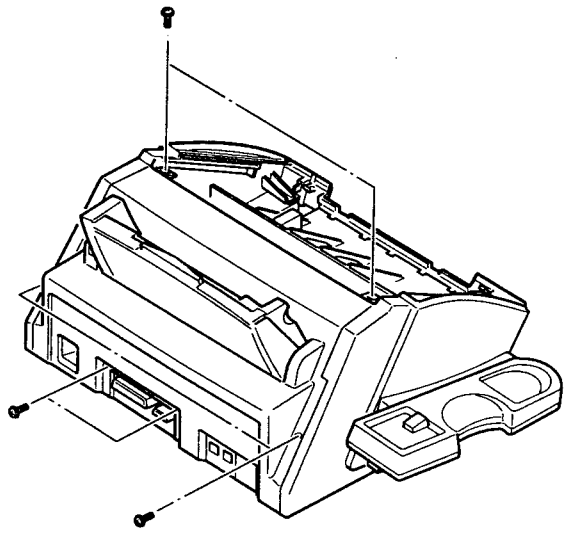


Figure 7.27

Note : When you assemble the rear cover, make sure the tabs on the over fit properly in place, as shown.

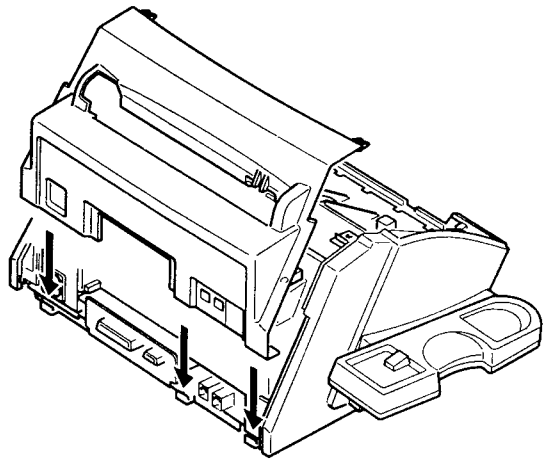


Figure 7.28

3. Remove the two screws as shown, and remove the covers.

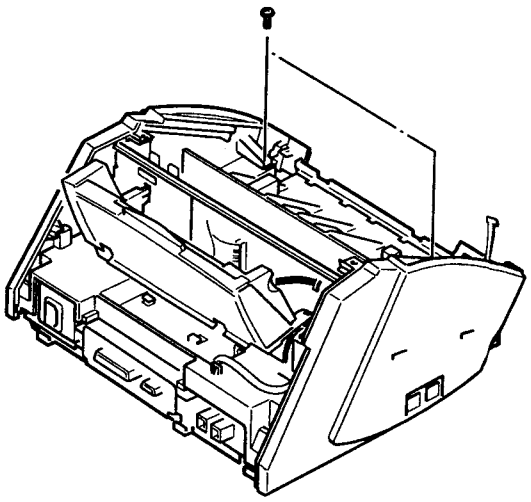


Figure 7.29

Note : When you assemble the side covers, make sure the tabs on the side covers fit properly in place, as shown.

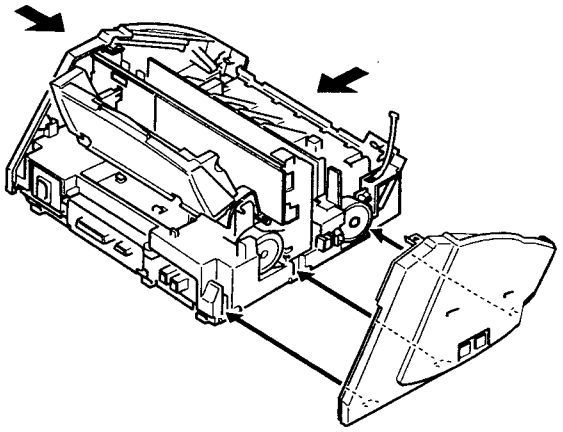


Figure 7.30

7-4 Hook PBA

1. Remove the screw in the side of the cradle, pull the cradle up slightly, and take it out.

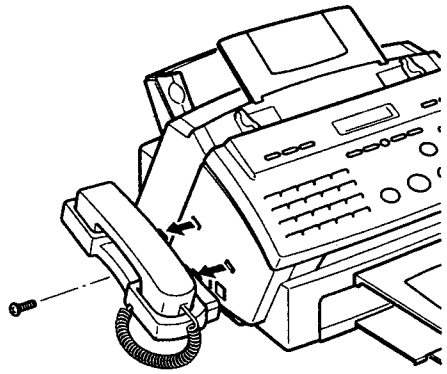


Figure 7.32

2. Unplug the telephone cord between the machine and the cradle.

3. Turn the cradle over and remove the two screws.

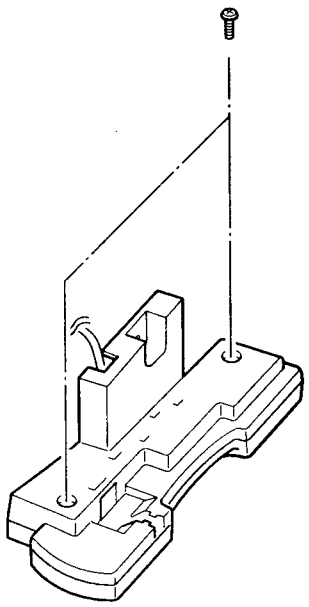


Figure 7.33

4. Turn the cradle back and remove the two screws as shown, and take out the PBA.

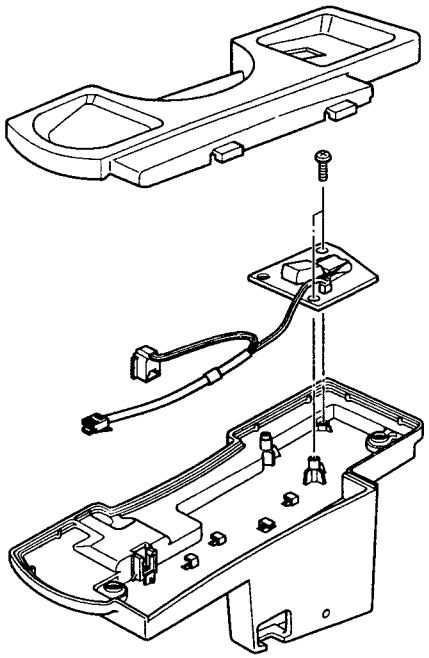


Figure 7.34

Note : When reassembling the cradle, make sure the telephone cords are routed properly through the groove on the bottom.

7-5 Main PBA, LIU PBA, SMPS

1. Slide the top cover up completely, and take it out.

2. Remove the front screw in the bottom of the machine, as shown.

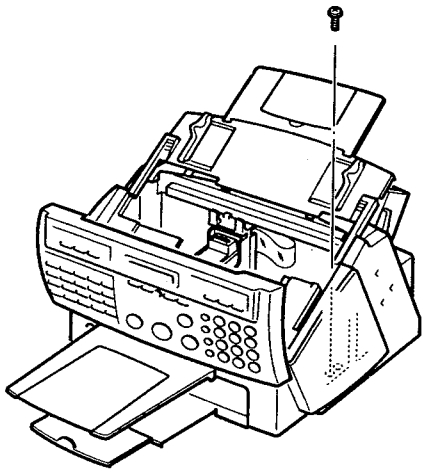


Figure 7.35

3. Turn the machine over. Remove the five screws, and take out the main chassis.

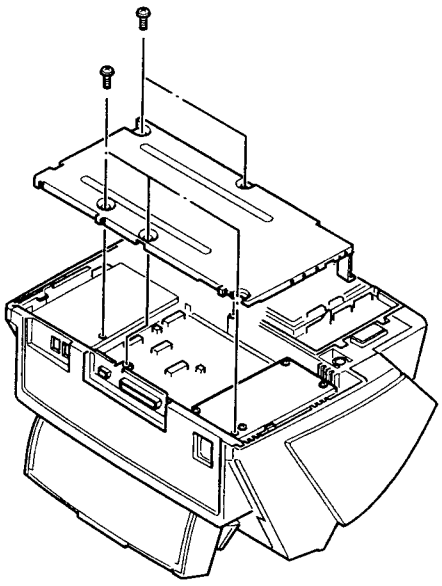


Figure 7.36

Note : When reassembling the main chassis, fit one side of the chassis under the tab on the right side of the chassis, push the other end of the chassis firmly, then fasten five screws. Then turn it over and fasten one screw.

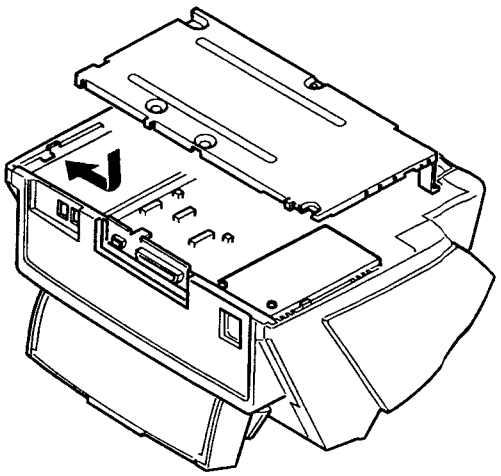


Figure 7.37

To Remove LIU PBA

1. After performing steps 1-3, unplug two connectors and remove two screws from the LIU PBA. Take out the PBA.

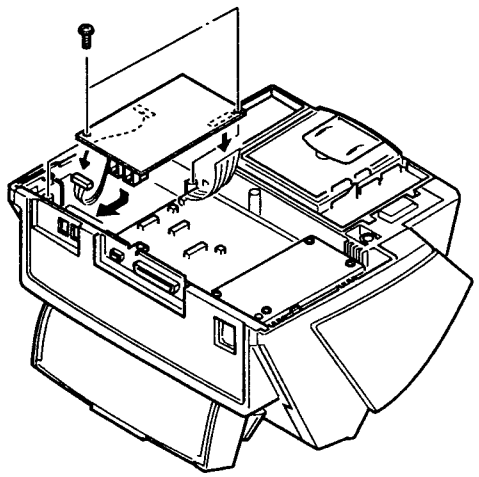


Figure 7.38

2. Remove four screws as shown, and take out the PBA.

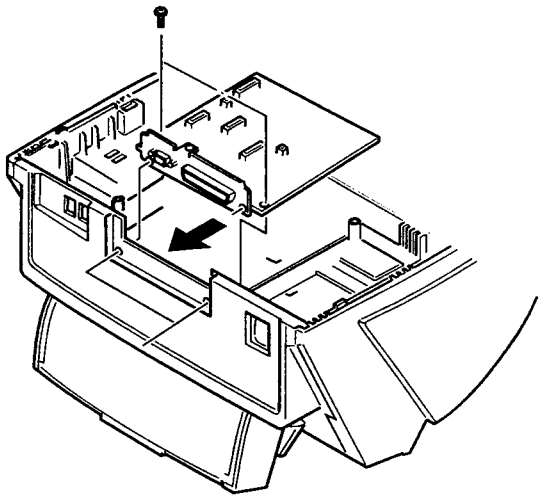


Figure 7.40

To Remove Main PBA

1. After performing steps 1-3, unplug all connectors from the main PBA.

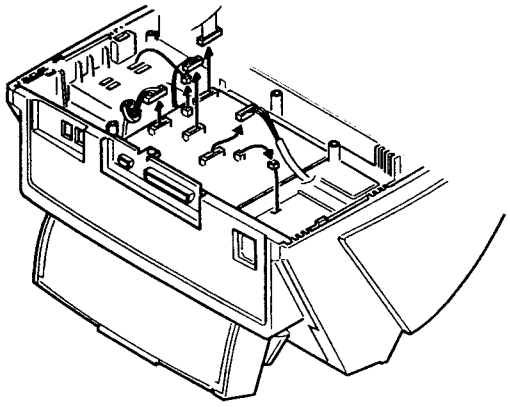


Figure 7.39

To Remove SMPS

1. After performing steps 1-3, unplug two connectors, and remove two screws as shown. Take out the SMPS.

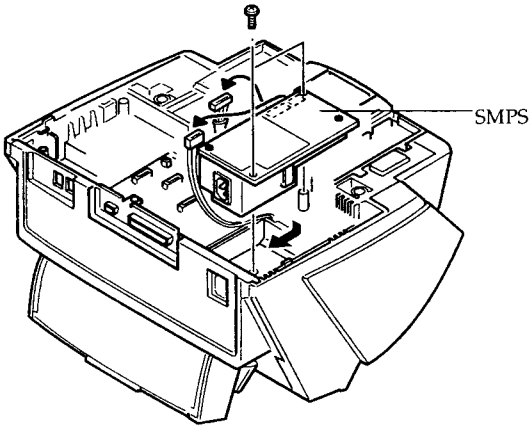


Figure 7.41

7-6 Printer Section

7-6-1 Printer Unit

1. Remove all covers as described in '7-3 Covers.'
2. Remove the screw in the cover harness, and two screws in the fixing exit as shown.

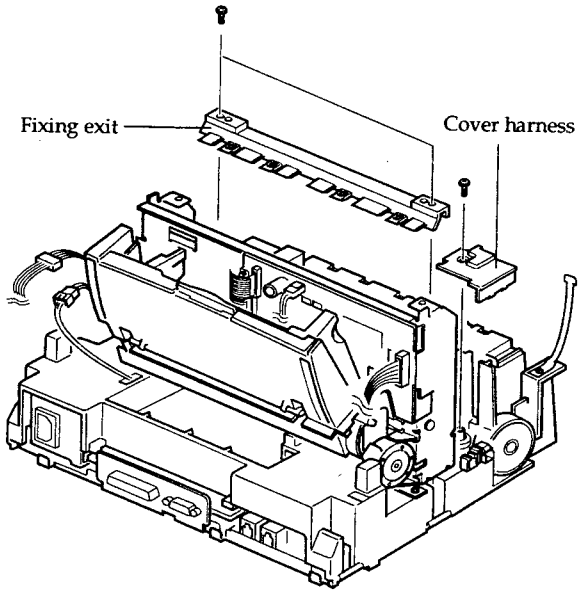


Figure 7.42

3. Remove three connectors as shown.

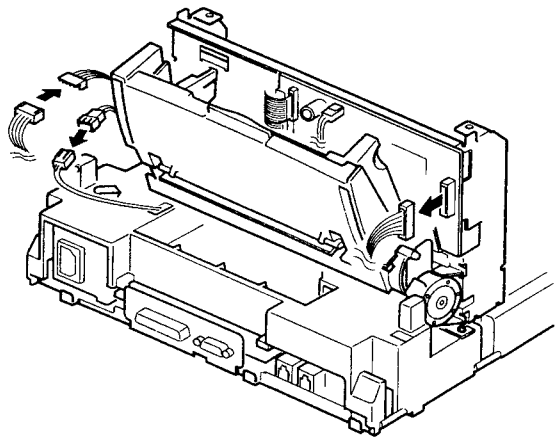


Figure 7.43

4. Remove the five screws securing the printer unit, and take out the printer unit.

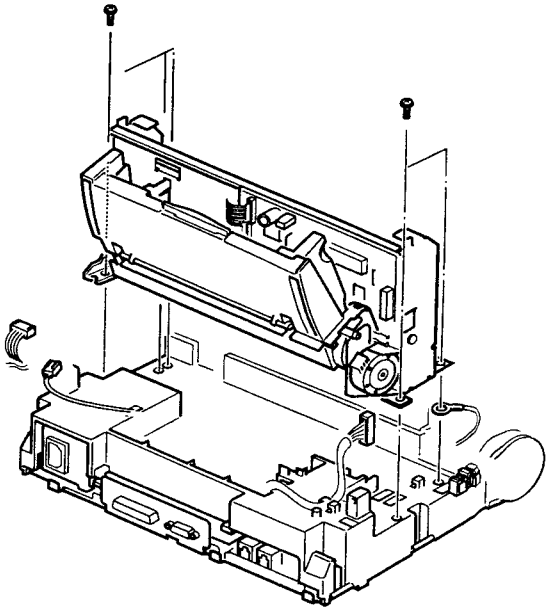


Figure 7.44

Note : When reassembling the unit, be careful not to peel off any wire coating.

7-6-2 Printer PBA

1. Remove the scan unit and all covers as described in '7-2-1 Scan Unit' and '7-3 Covers' respectively.

2. Remove six connectors from the printer PBA as shown in figure 3.45. Be careful not to peel off the connector cables.

3. Remove two screws in the PBA, and one screw from the main chassis.

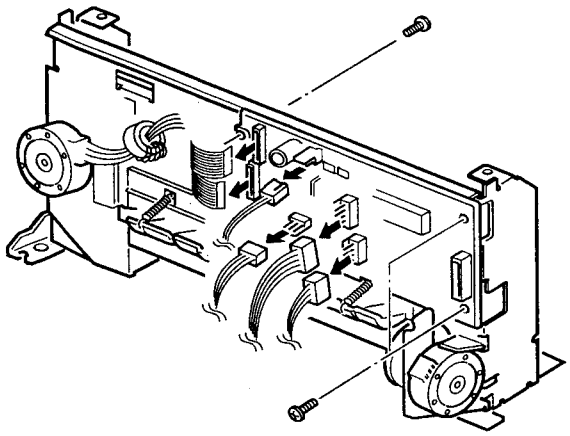


Figure 7.45

4. Release the feed actuator securing the PBA as shown and take out the PBA in the direction arrow.

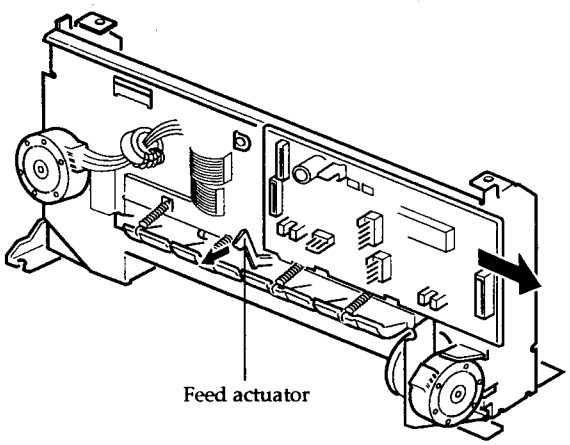


Figure 7.46

7-6-3 Automatic Sheet Feeder (ASF) Ass'y

1. Remove the printer unit as described in '7-6-2 Printer Unit.'

2. Remove the two screws as shown.

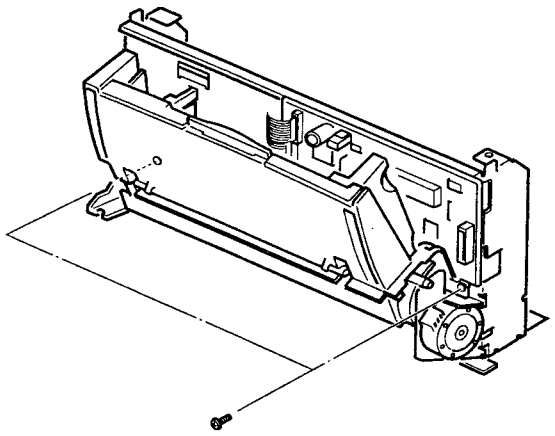


Figure 7.47

3. Remove the ASF ass'y from the printer unit by pushing tabs outward. Take out the ASF ass'y in the direction of arrow.

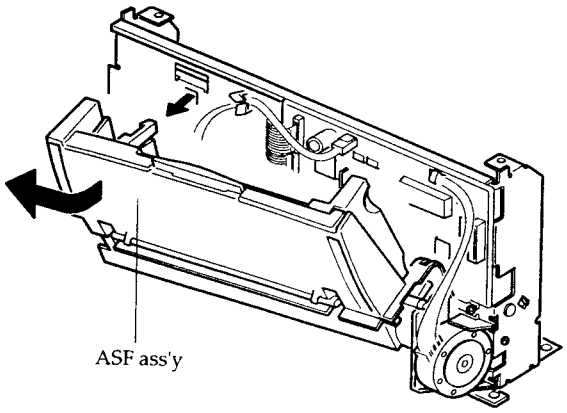


Figure 7.48

4. Remove the screw. Take the pick up shaft out of the ASF frame while pushing it to the right.

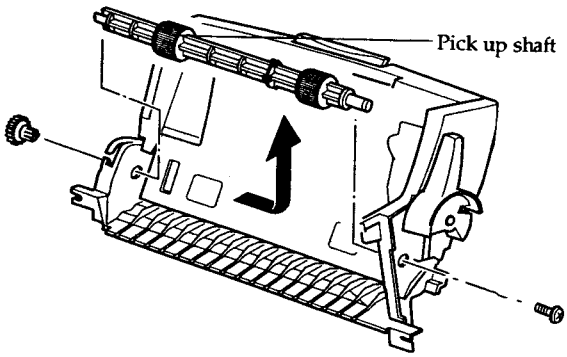


Figure 7.49

Note : When you reassemble the ASF ass'y, be careful the harness in the line feed motor does not become shorted.

7-6-4 Home Ass'y

1. Remove the printer unit and ASF ass'y as described in '7-6-1 Printer Unit' and '7-6-3 Automatic Sheet Feeder (ASF) Ass'y' respectively.

2. Remove the screw and take out the home ass'y.

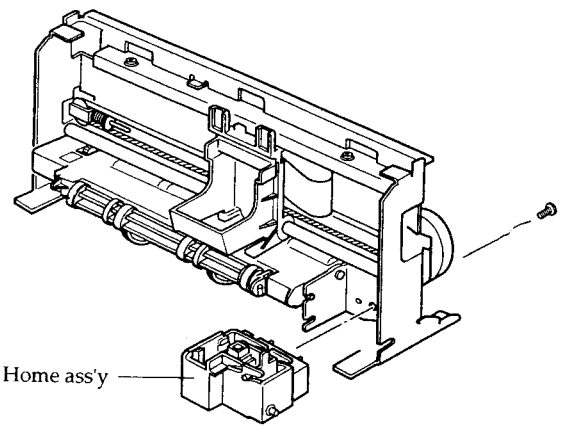


Figure 7.50

7-6-5 Carrier Ass'y

1. Remove the printer unit and ASF ass'y as described in '7-6-1 Printer Unit' and '7-6-3 Automatic Sheet Feeder (ASF) Ass'y' respectively.

2. Unplug the head cable as shown.

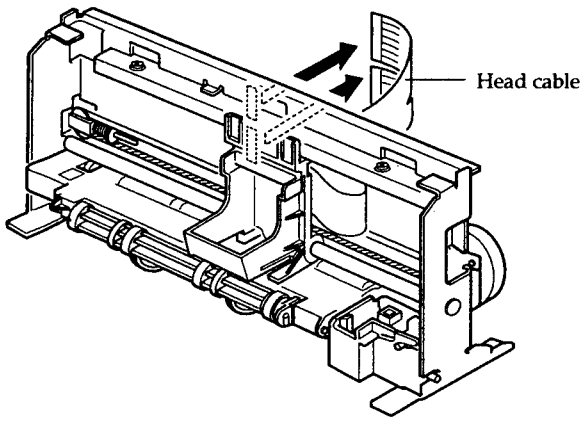


Figure 7.51

3. Remove the holder by releasing tabs hooked in the main frame.

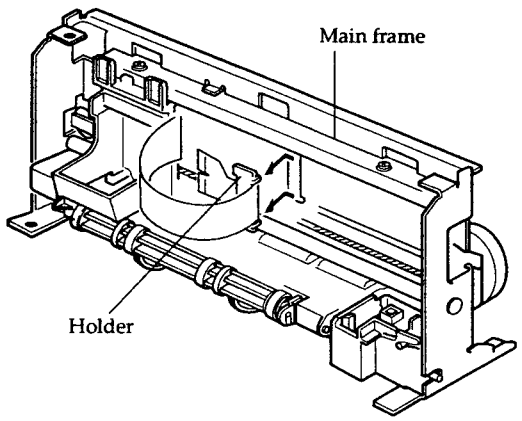


Figure 7.52

Notes :
- Use an extreme caution pulling the head cable through the narrow hole. Fold the cable to fit through the narrow hole.
- When you reassemble the head cable, make sure the holder tabs are inserted properly into the corresponding holes.

4. Remove the two screws.

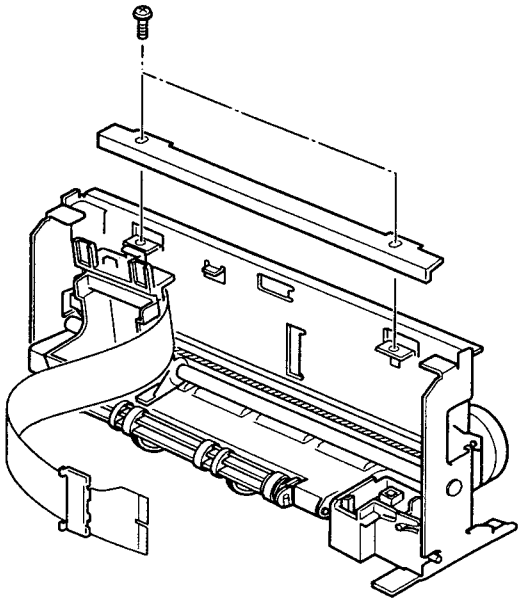


Figure 7.53

5. Remove one screw securing the carrier shaft, take out the spring on the left, remove the carrier shaft, and take out the carrier ass'y.

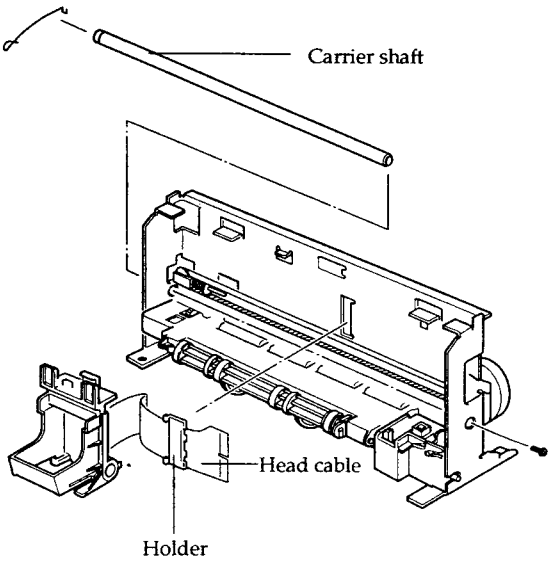


Figure 7.54

Note : Reassemble the carrier ass'y, as follows:

1. Attach the low end of the carrier ass'y into the lower belt. Be sure that the three tabs on the low end fit over the belt as shown below.

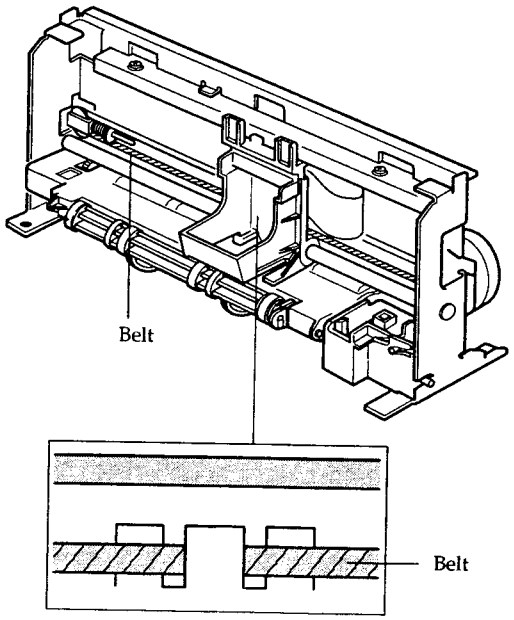


Figure 7.55

2. Install the carrier shaft in place, fasten the screw, and install the spring.

3. Install the rail frame and fasten the two screws. When you install the rail frame, be careful the three tabs on the upper end of the carrier ass'y fit onto the frame as shown below.

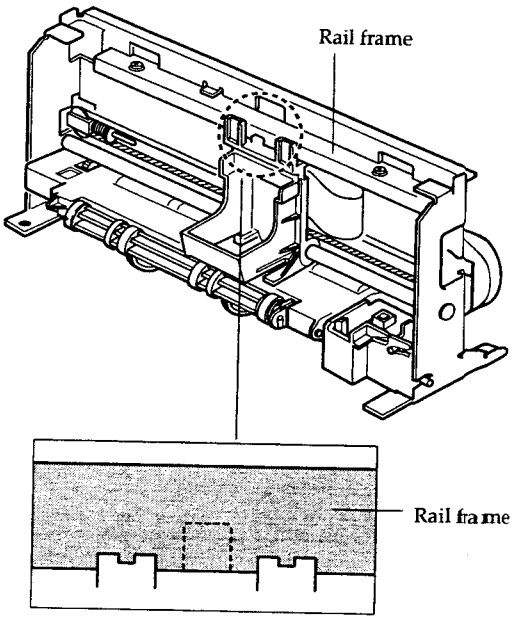


Figure 7.56

4. Route the head cable to the printer PBA through the narrow hole and attach the holder in place. Use extreme caution routing the head cable through the narrow hole.

7-6-6 Base Frame Ass'y

1. Remove the printer unit, ASF ass'y, home ass'y, and carrier ass'y as described in '7-6-1 Printer Unit' and '7-6-3 Automatic Sheet Feeder (ASF) Ass'y', '7-6-4 Home Ass'y, and '7-6-5 Carrier Ass'y' respectively.

2. Remove the four springs as shown in the figure 7.57.

3. Push the four roller frictions slightly downward and take them out.

4. To remove the feed actuator, push the left end slightly inward by using a sharpen object and take it out by pulling it in the direction of arrow.

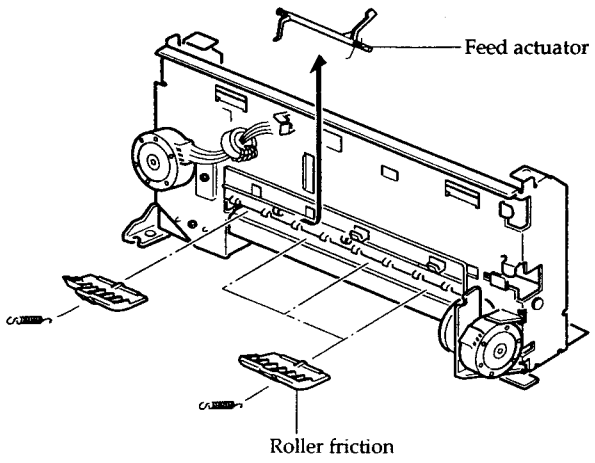


Figure 7.57

5. Pull up the rear end of the base frame slightly and take it out.

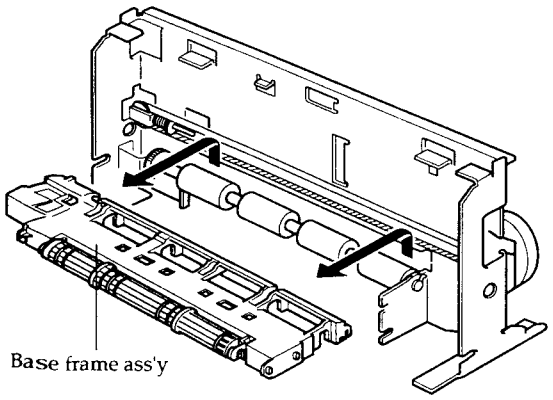


Figure 7.58

7-6-7 Feed Roller Ass'y

1. Remove the base frame ass'y as described in '7-6-6 Base Frame Ass'y.'

2. Seperate the feed roller ass'y from the main frame by holding the right handle of the feed bearing and turning it in the direction of arrow.

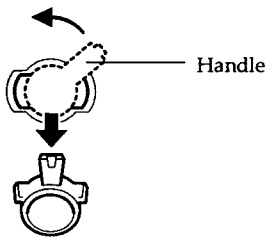


Figure 7.59

3. Push the feed roller ass'y to the right and remone it from the main frame.

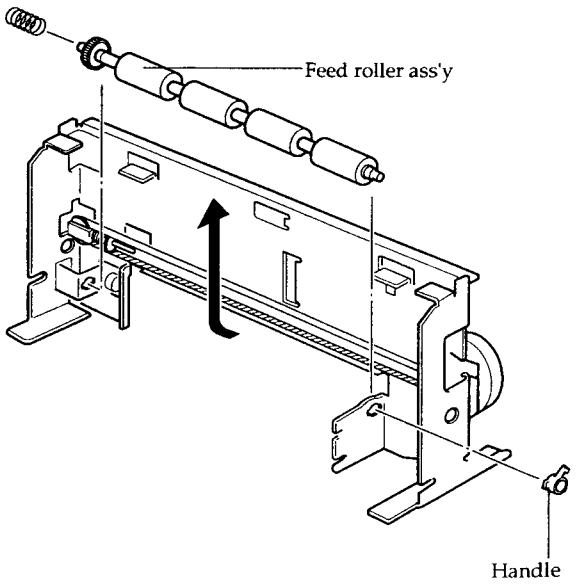


Figure 7.60

7-6-8 Frame Line Feed Ass'y

1. Remove the feed roller ass'y as described in '7-6-7 Feed Roller Ass'y.'

2. Remove the three screws, and take out the frame line feed ass'y.

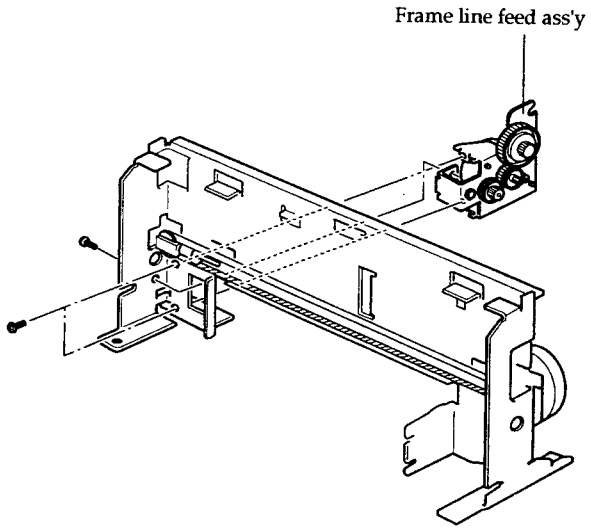
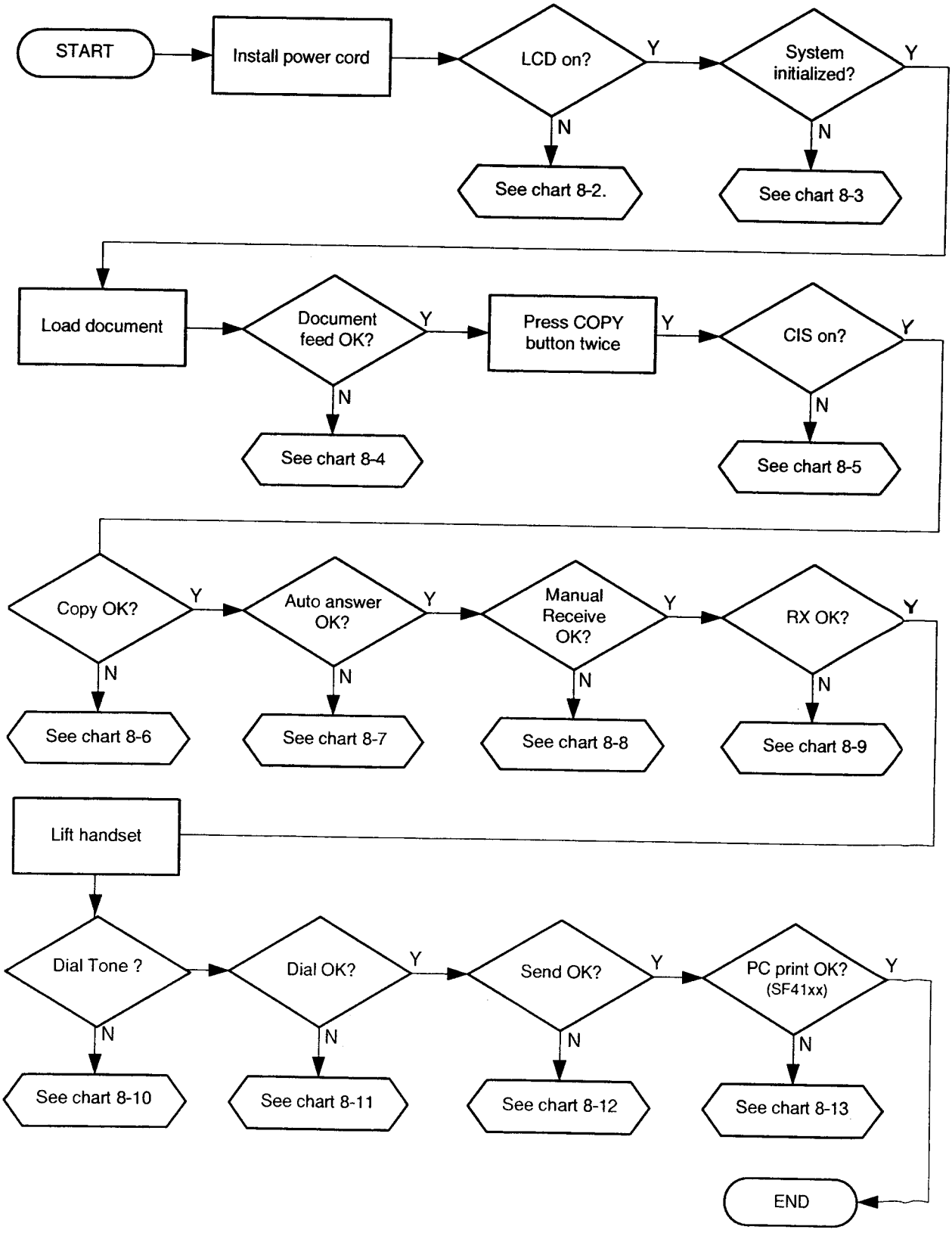


Figure 7.61

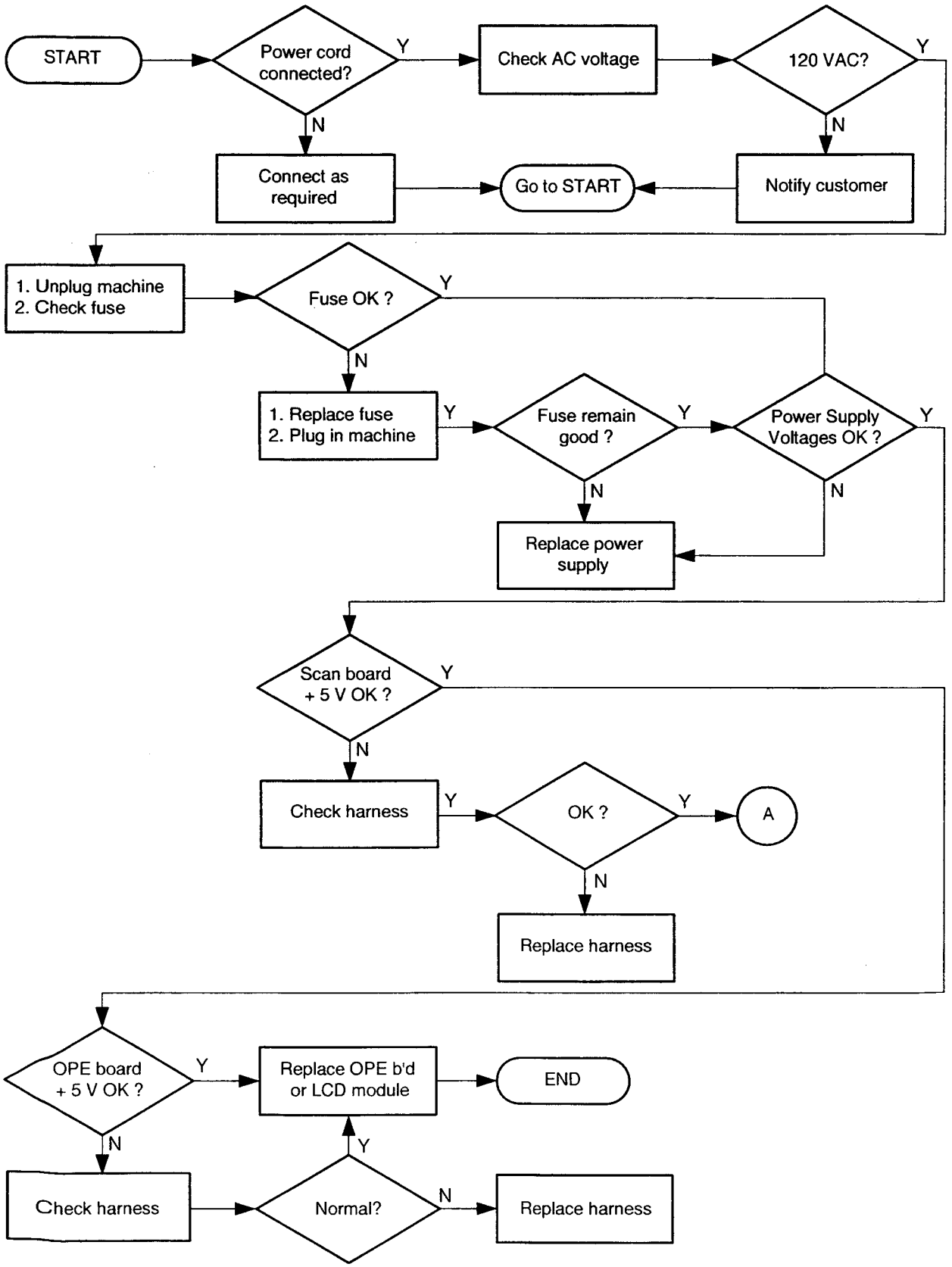
MEMO

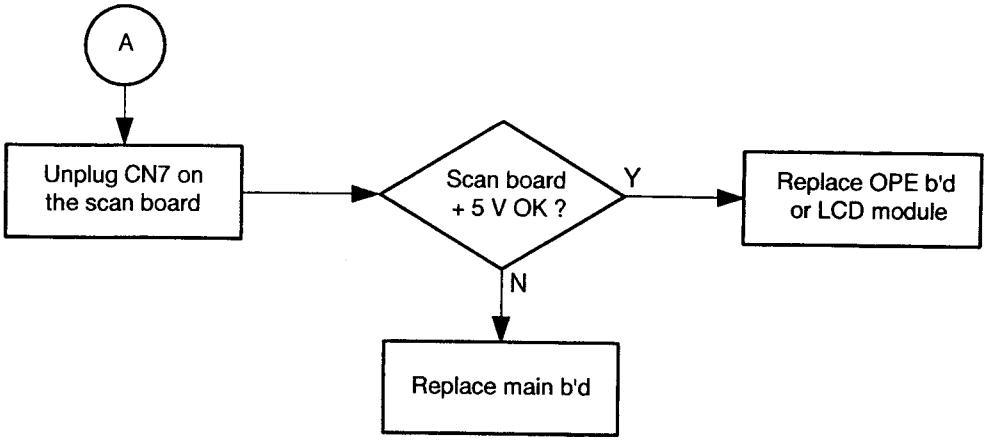
8. Troubleshooting

8-1 Overall Troubleshooting Flow

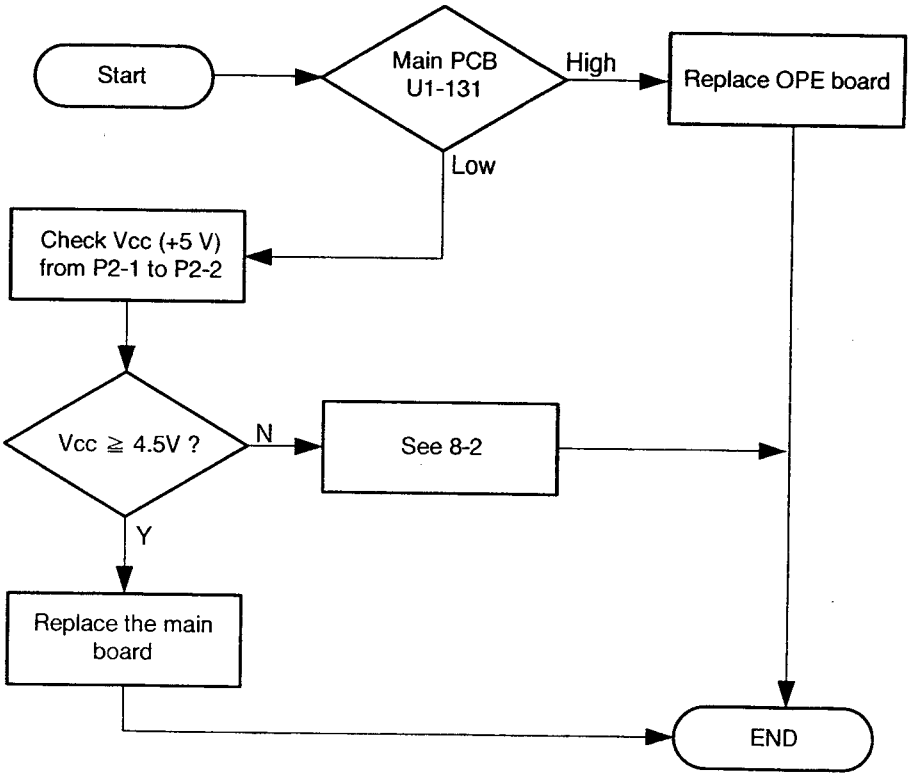


8-2 LCD Malfunction

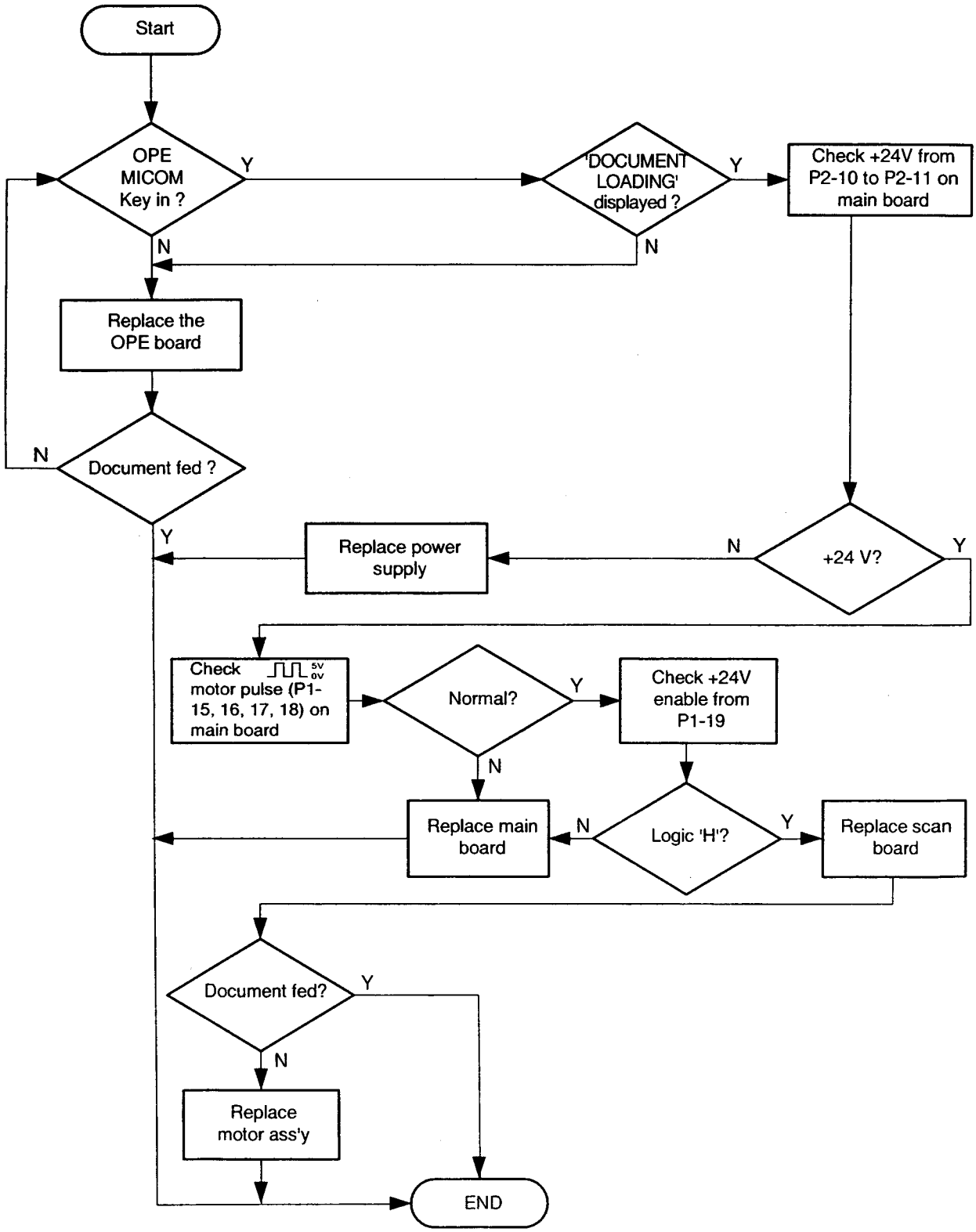




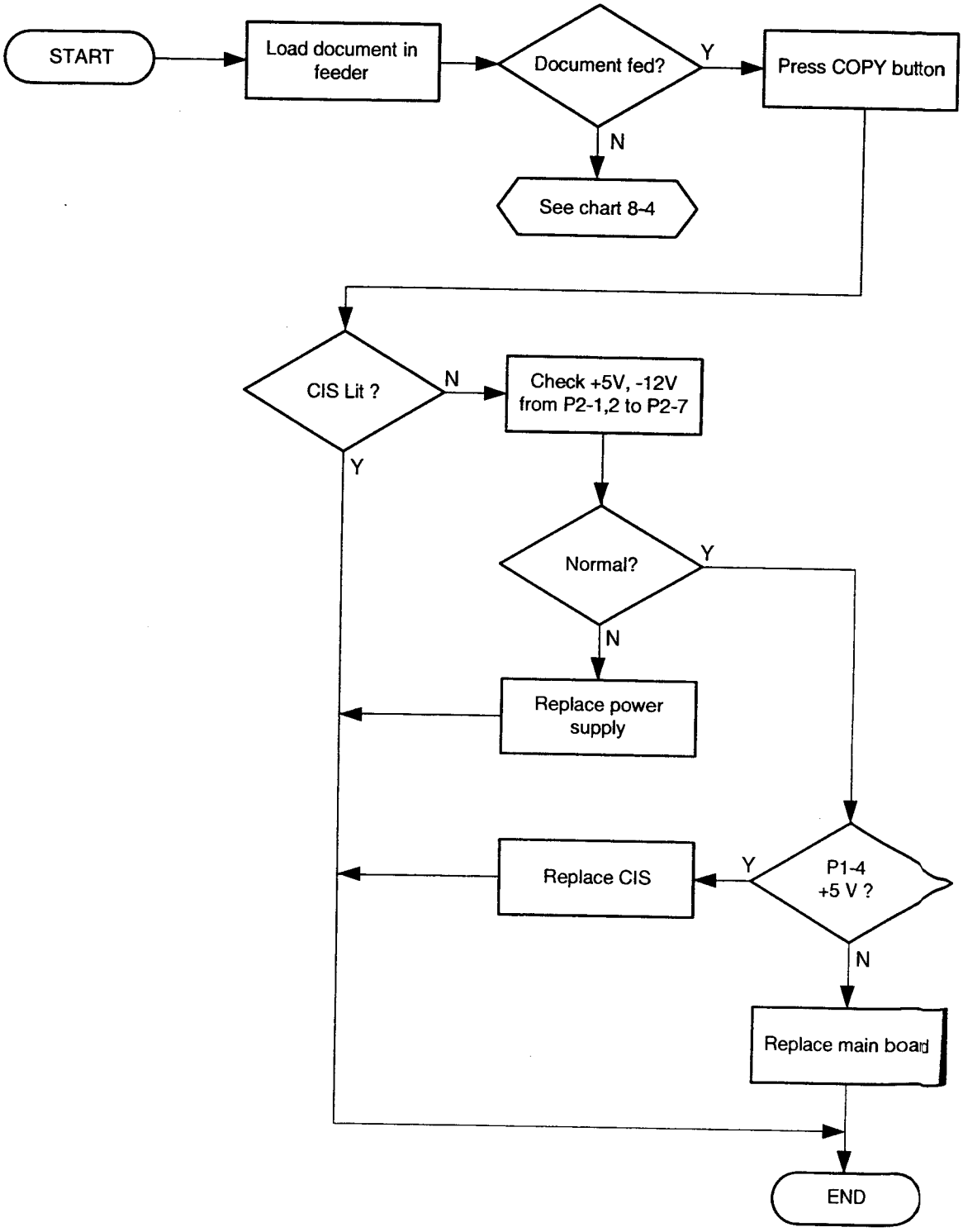
8-3 System Not Initialized



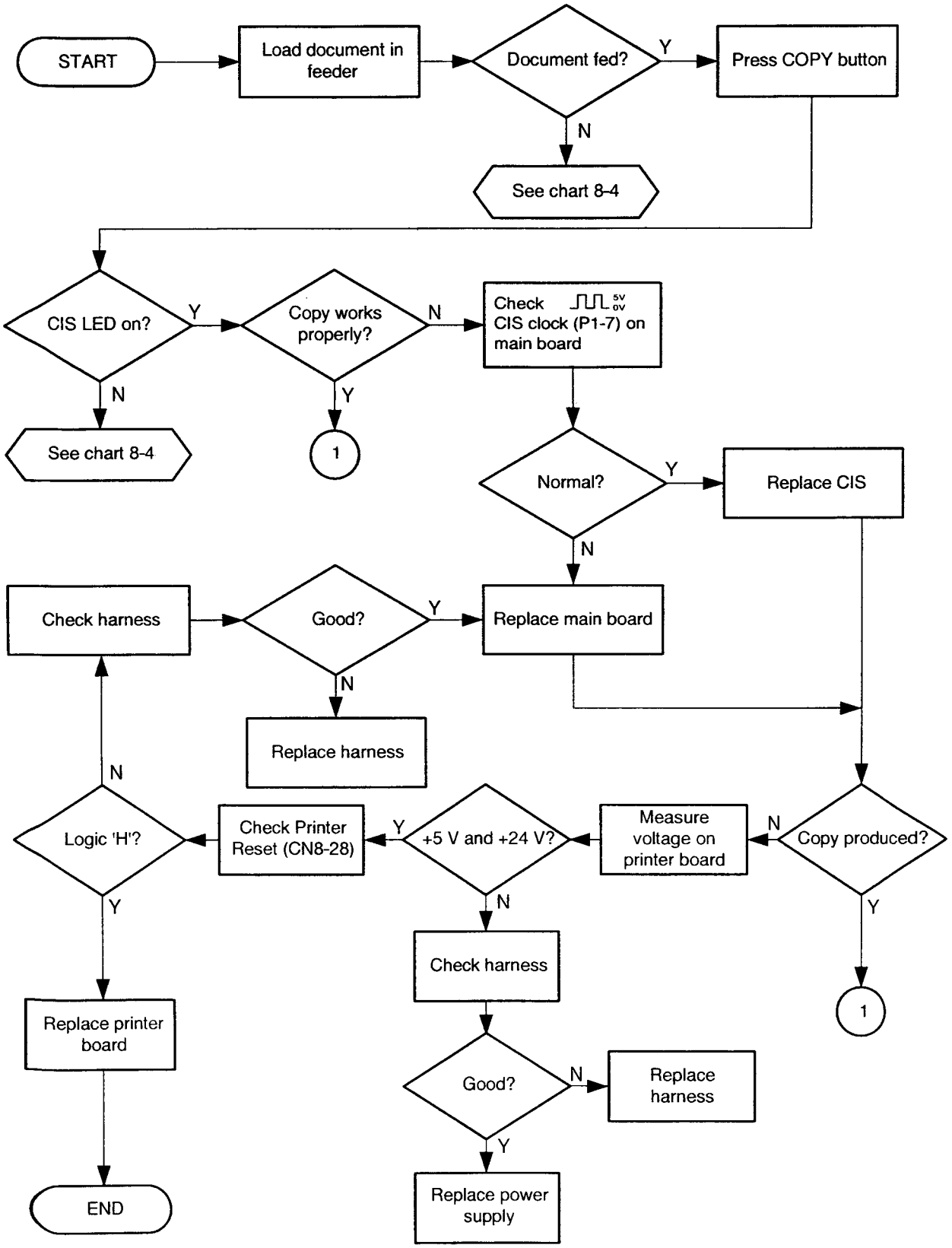
8-4 Document Feeding Malfunction

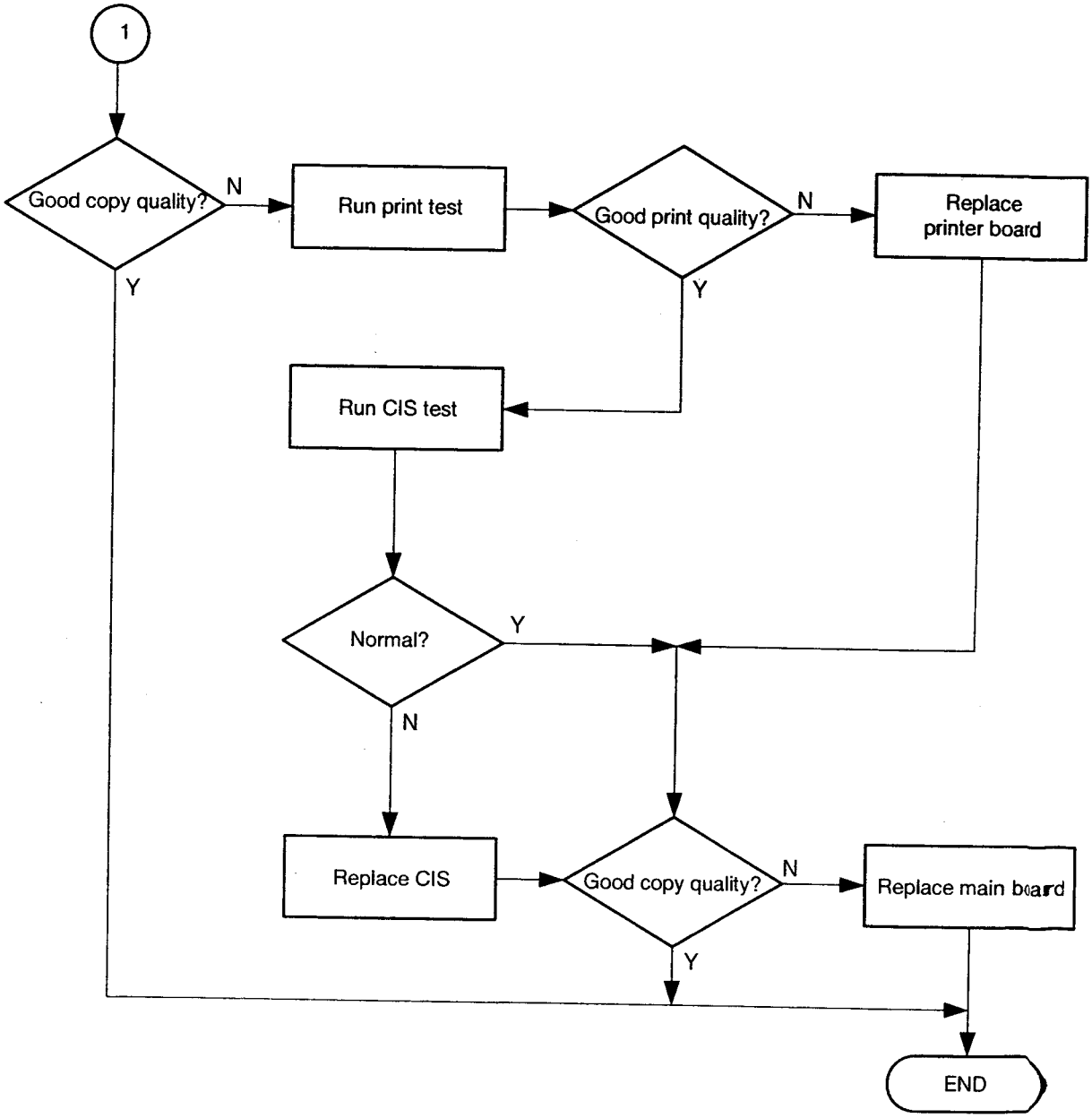


8-5 CIS LED Not Lit

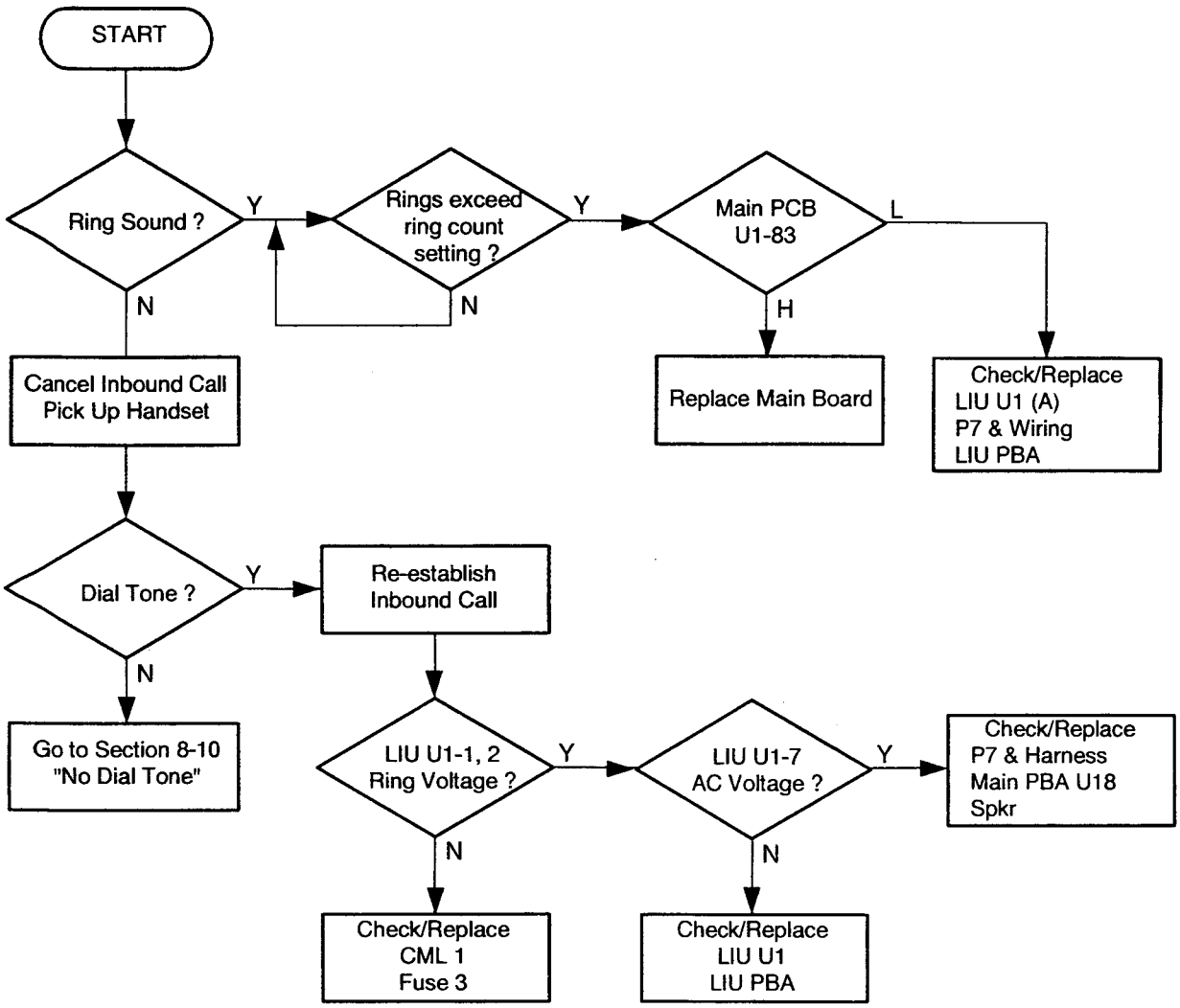


8-6 Copy Malfunction

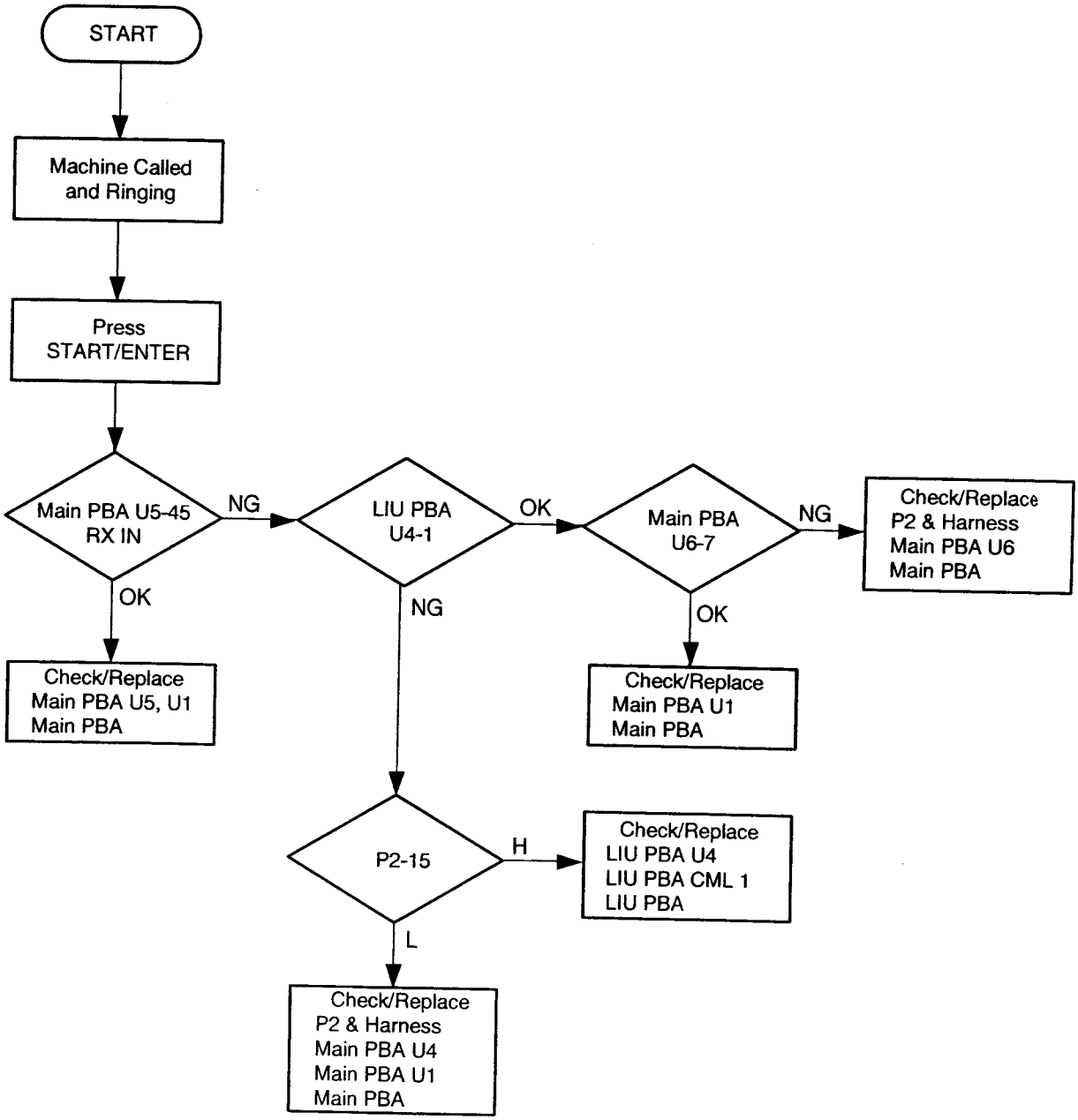



1
Good copy quality?
N
Y
Run print test
Good print quality?
N
Y
Replace printer board
Run CIS test
Normal?
Y
N
Replace CIS
Good copy quality?
N
Y
Replace main board
END

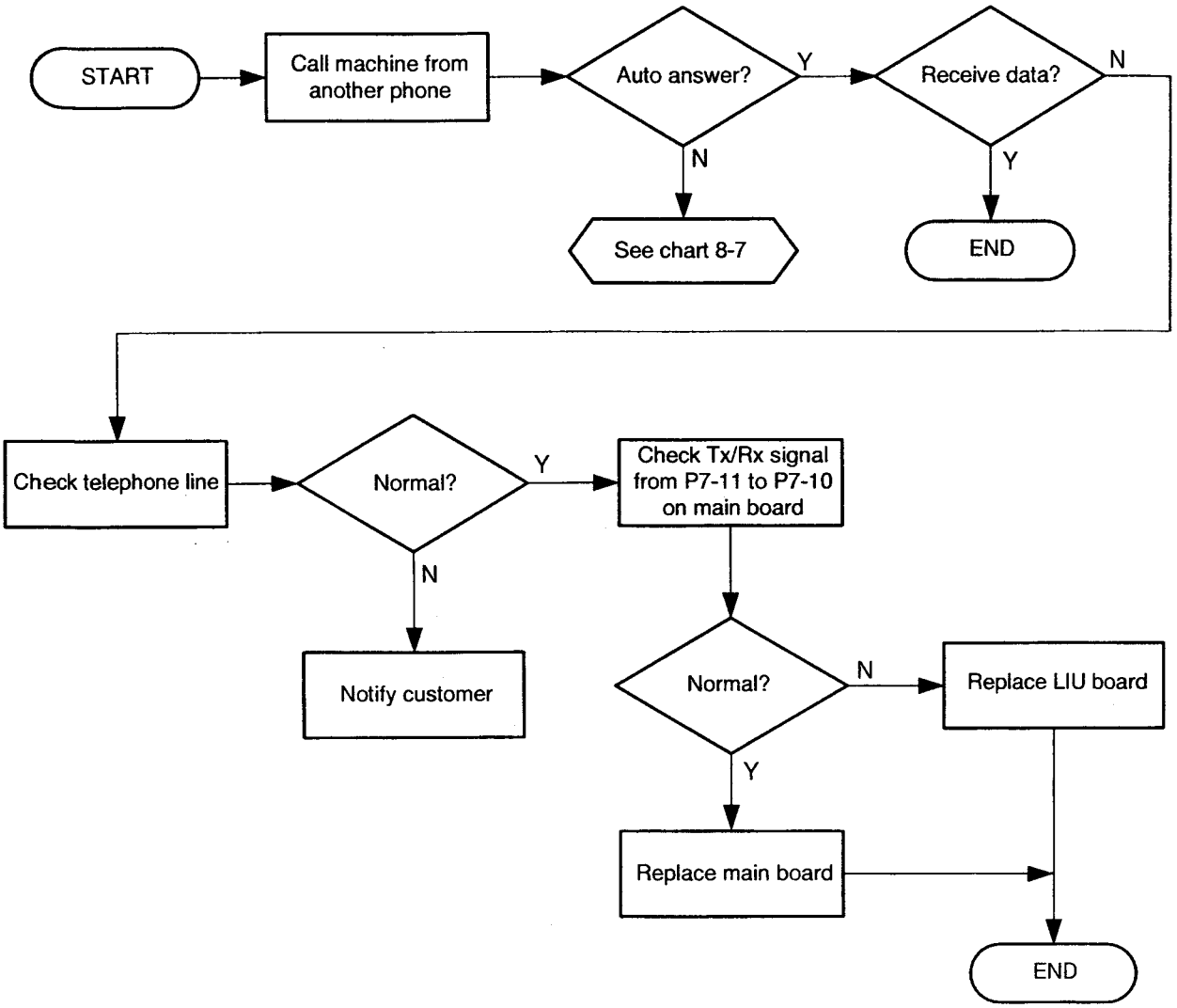
8-7 No Auto Answer



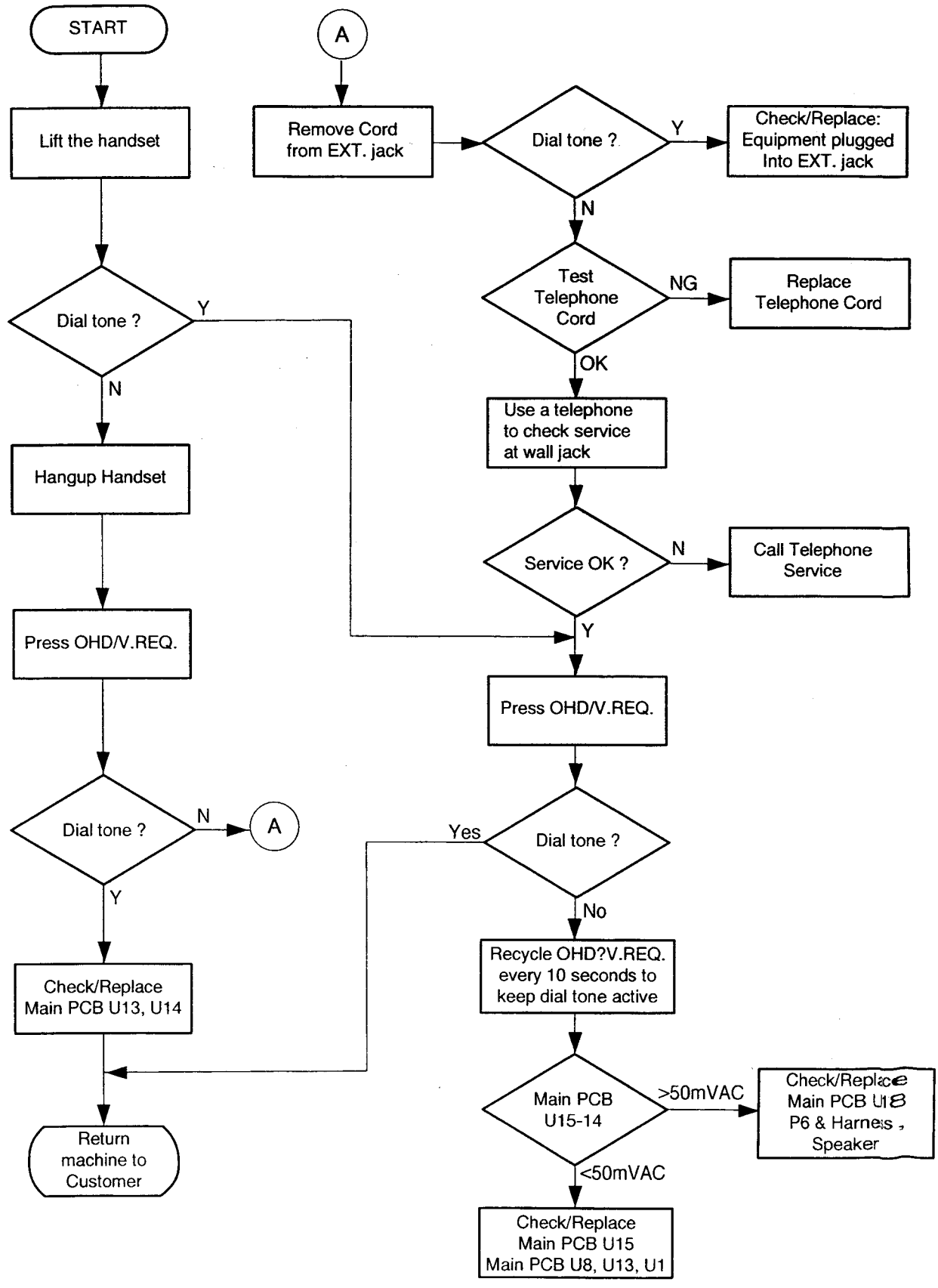
8-8 Will Not Receive Manually



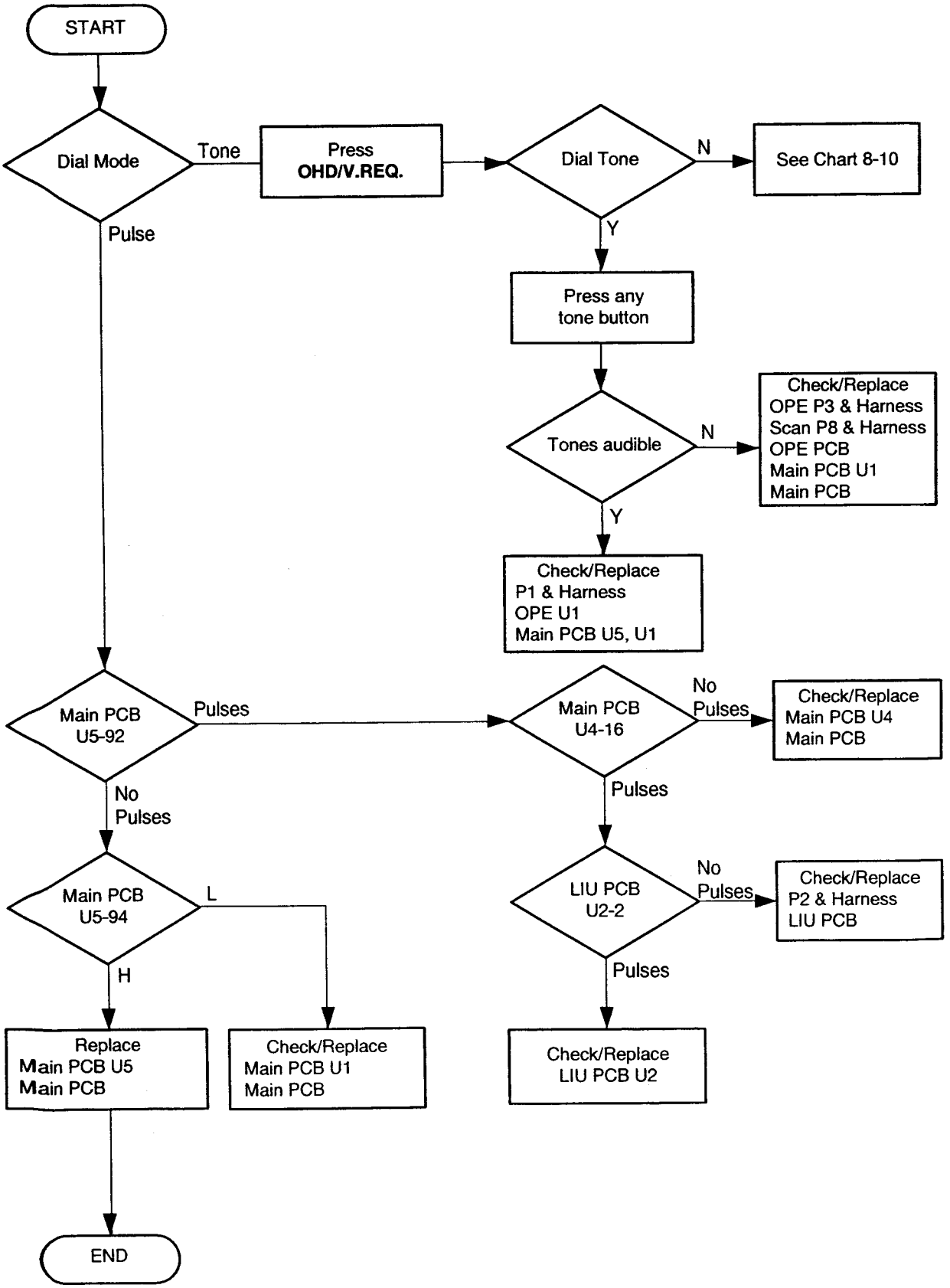
8-9 Receive Malfunction



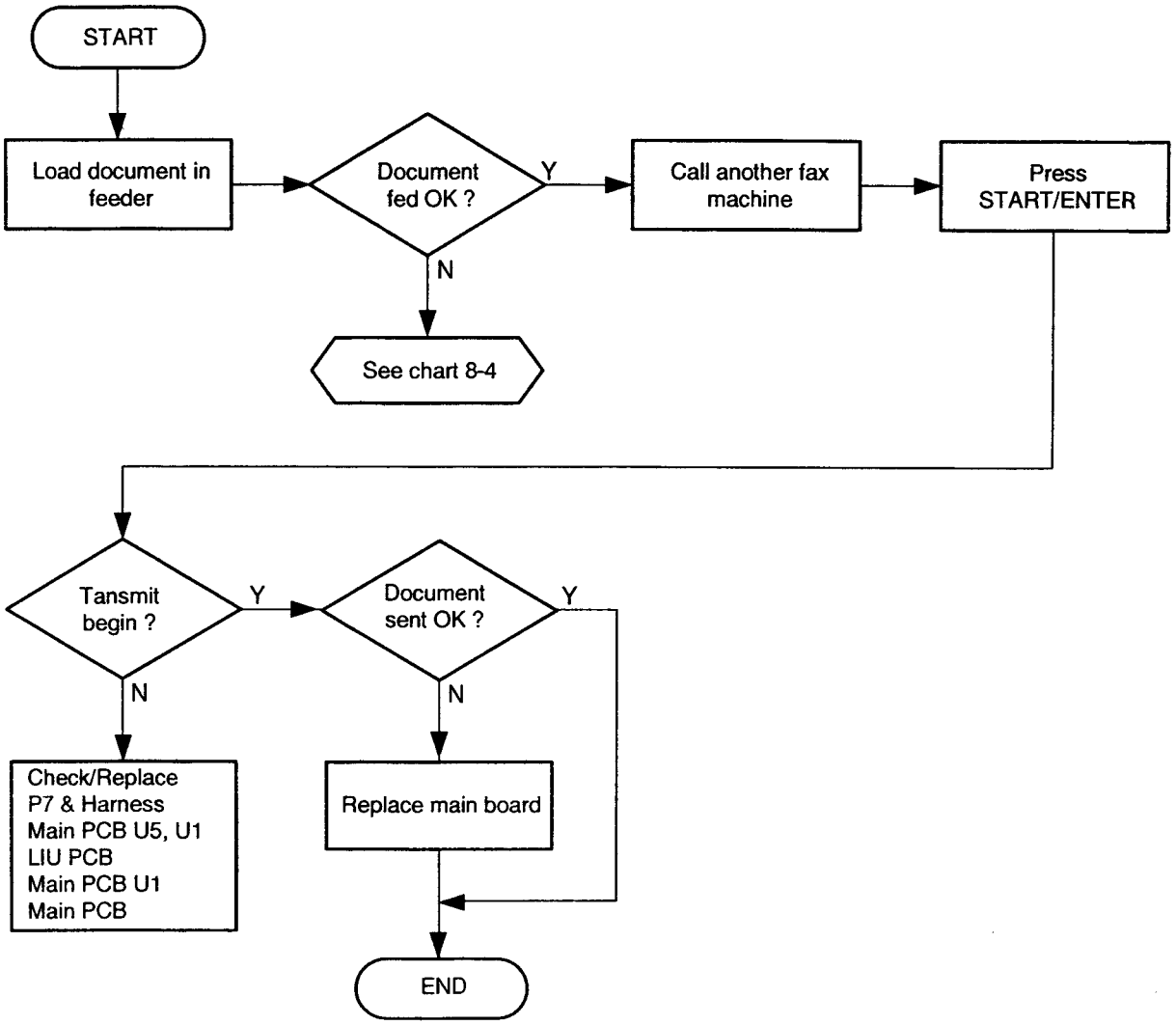
8-10 No Dial Tone



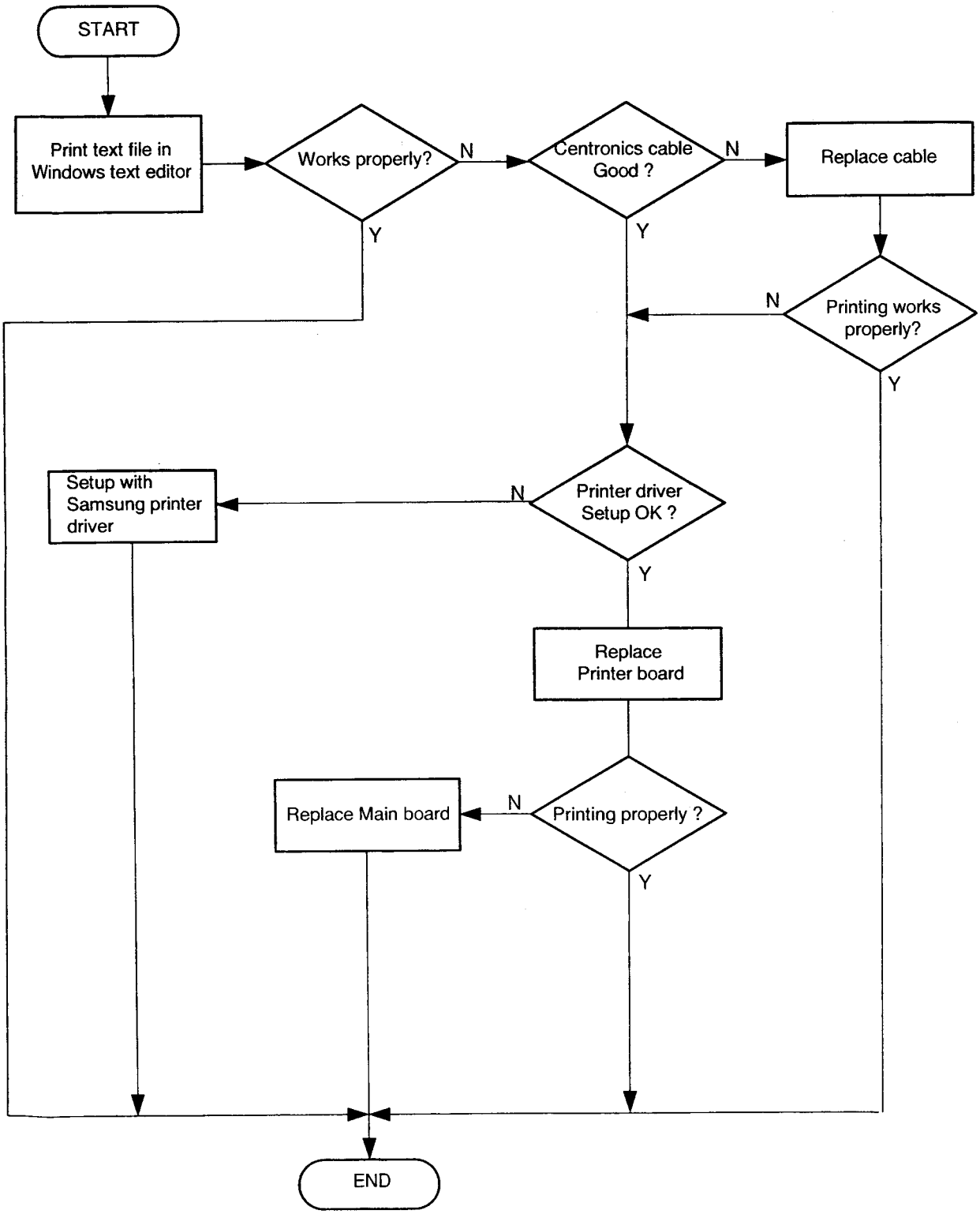
8-11 No Dialing



8-12 Transmit Malfunction

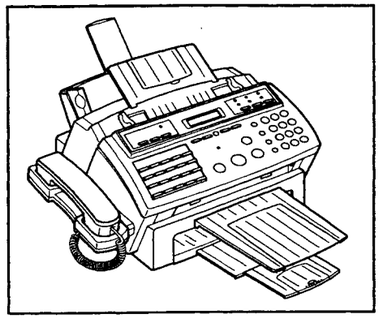


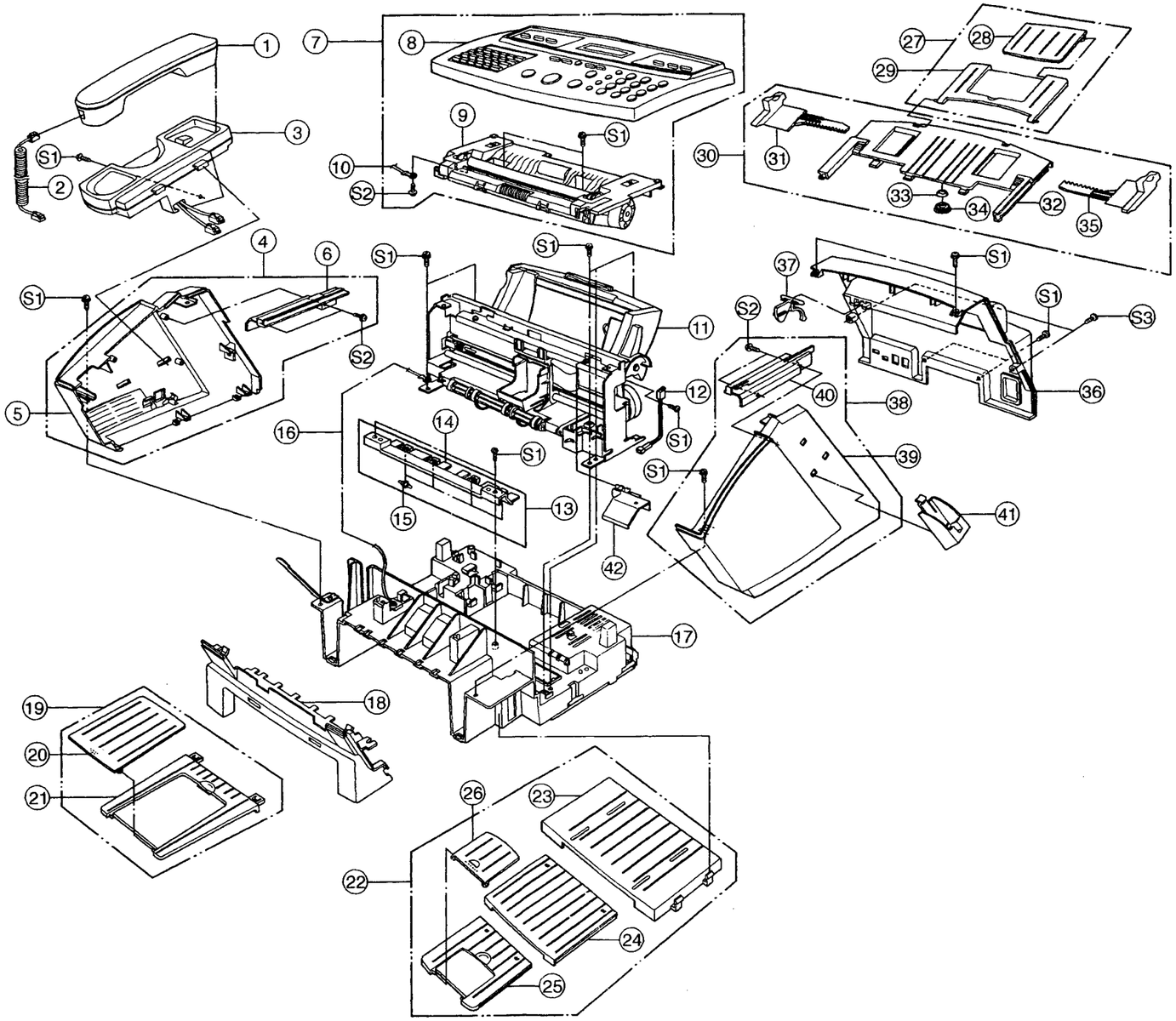
8-13 PC Print Malfunction



9. Exploded Views and Parts List

9-1. Main Assembly





Main Assembly Parts List

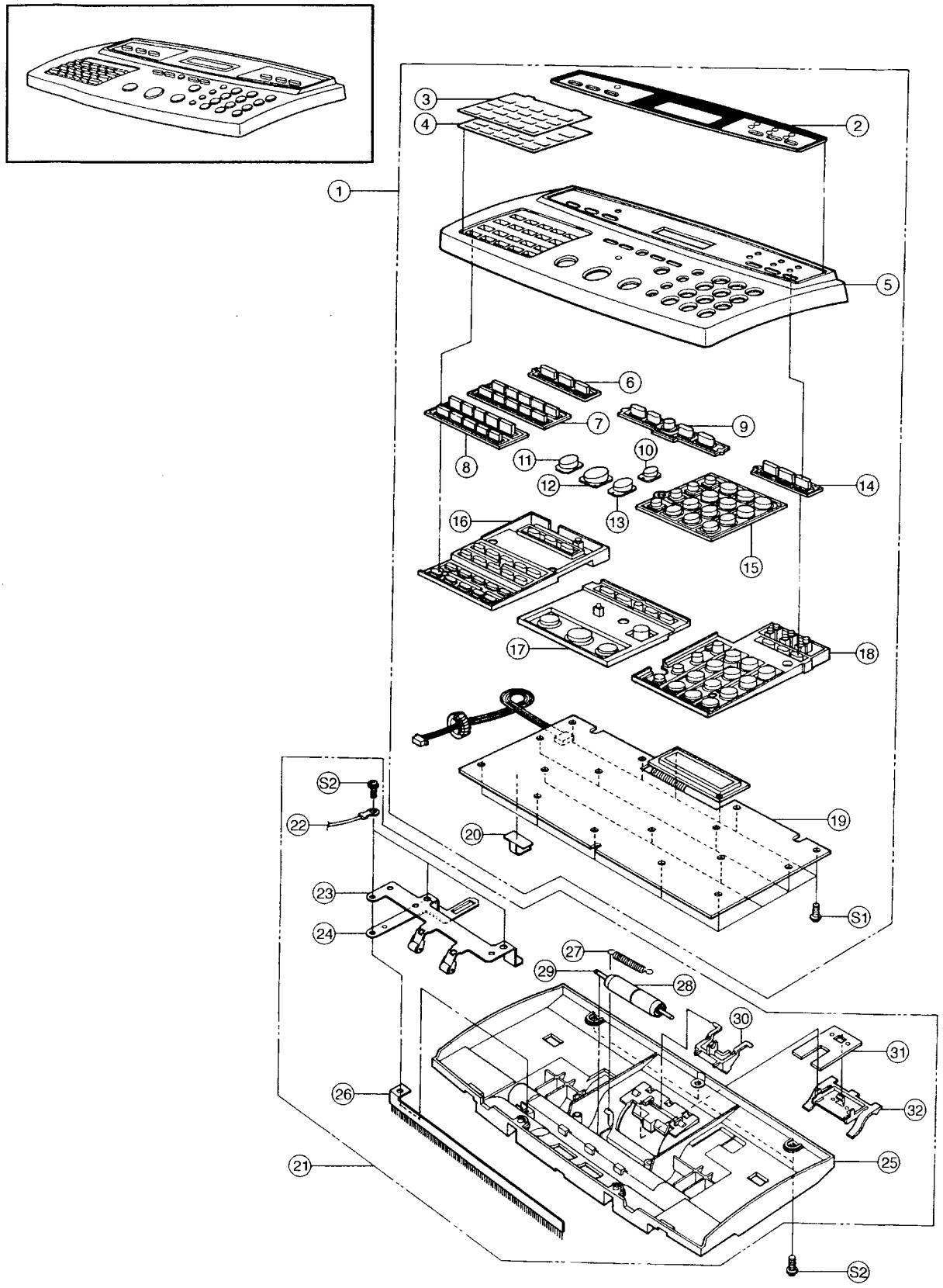
	Location No.	Description	SEC. Code	Q'ty	Remark
	1	HANDSET	JF96-00019A	1	
	2	CURL CORD	JF39-60001A	1	
	3	CRADLE	JG96-00004B	1	
	4	SIDE COVER (L) (M)	JG75-10018A	1	
	5	COVER, SIDE (L) (M)	*	1	
	6	GUIDE, TOP (L)	*	1	
	7	SCAN UNIT	JG96-00003E	1	SF4000
			JG96-00033D	1	SF4200
	8	OPE UNIT	JG96-00007C	1	SF4000
			JG96-00035D	1	SF4200
	9	SCAN, LOWER	JG96-00009B	1	
	10	HARNESS, GROUND	*	1	SCAN LOWER
	11	ENGINE (1)	JG96-00029A	1	SF4000
			JG96-00032A	1	SF4200
	12	LEVER S/W ASS'Y	JG96-00045A	1	
	13	FIXING EXIT ASS'Y	JG75-10012A	1	
	14	FIXING EXIT	*	1	
	15	ASS'Y, STAR WHEEL	*	4	
	16	HARNESS, GROUND	*	1	BASE-ENGINE
	17	BASE	JG96-00002B	1	
	18	COVER, FRONT	JG72-40017A	1	
	19	STACKER, TX	JG75-10009A	1	
	20	STACKER (1)	*	1	
	21	STACKER (2)	*	1	
	22	DUMMY, BASE ASS'Y	JG75-10011A	1	
	23	DUMMY, BASE	*	1	
	24	STACKER, RX(2)	*	1	
	25	STACKER, RX(1)	*	1	
	26	STACKER, FLIP	*	1	
	27	CHUTE	JG75-10008E	1	
	28	CHUTE (2)	*	1	
	29	CHUTE (1)	*	1	
	30	TOP COVER ASS'Y	JG75-10007A	1	
	31	GUIDE DOC (L)	*	1	
	32	COVER TOP	*	1	
	33	SPRING, CURVE	*	1	
	34	GEAR, PINION	*	1	
	35	GUIDE, DOC (R)	*	1	

	Location No.	Description	SEC. Code	Q'ty	Remark
	36	COVER, REAR (M)	JG72-40033A	1	SF4000
			JG72-40052A	1	SF4200
	37	LEVER SENSOR	JG72-40034A	1	
	38	COVER SIDE UNIT ASS'Y	JG75-10017A	1	
	39	COVER, SIDE (R) (C)	*	1	
	40	GUIDE TOP (R)	*	1	
	41	ASS'Y, GARAGE	*	1	
	42	COVER HEAD	JG72-40818A	1	
	S1	SCREW, TAPTITE, PWH, +, B, M3x10	6003-000196	17	
	S2	SCREW, TAPTITE, BH, +, B, M3x8	6003-000015	5	
	S3	SCREW, TAPTITE, PH, +, B, M3x16	6003-000163	2	

* : Service not Available

MEMO

9-2. OPE Unit Assembly



OPE Unit Assembly Parts List

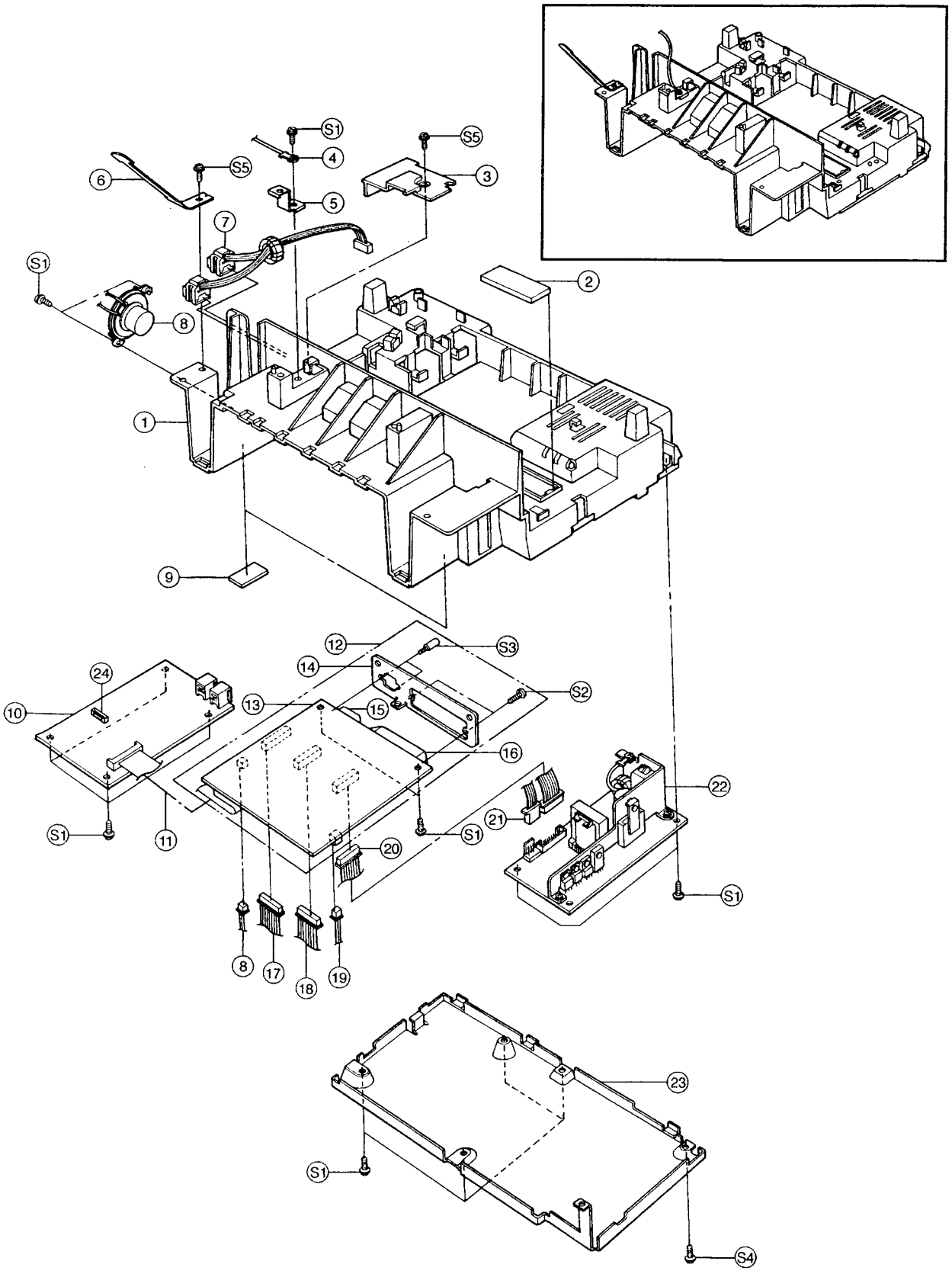
	Location No.	Description	SEC. Code	Q'ty	Remark
		OPE UNIT	JG96-00007C	1	SF4000
			JG96-00035D	1	SF4200
	1	OPE COVER ASS'Y	JG96-00006F	1	SF4000
			JG96-00034D	1	SF4200
	2	COVER, LCD (M)	JG74-10503D	1	SF4000
			JG74-10504G	1	SF4200
	3	COVER ADDRESS	JG74-10002A	1	
	4	PAPER ADDRESS	JG74-10004C	1	
	5	COVER OPE	JG72-40005C	1	
	6	KEY, CARTRIDGE	JG72-40015A	1	SF4000
		KEY, MODE	JG72-40014A	1	SF4200
	7	KEY, ONE-TOUCH (HIGH)	JG72-40008A	1	
	8	KEY, ONE-TOUCH (LOW)	JG72-40046A	1	
	9	KEY, SCROLL	JG72-40007A	1	
	10	KEY, STOP	JG72-40010A	1	
	11	KEY, COPY	JG72-40004A	1	
	12	KEY, START	JG72-40009A	1	
	13	KEY, OHD	JG72-40003A	1	
	14	KEY, MODE	JG72-40014A	1	
	15	KEY, TEL	JG72-40006A	1	
	16	RUBBER, A	JG73-10001A	1	
	17	RUBBER, B	JG73-10002A	1	
	18	RUBBER, C	JG73-10004A	1	
	19	PBA, OPE	JG92-00004A	1	
	20	MISCEL, METAL CLAMP	*	1	
	21	SCAN, UPPER	JG96-00008B	1	
	22	HARNESS , GROUND	*	1	SCAN-LOWER
	23	PINCH	JG75-10015A	1	
	24	GROUND SENSOR	JG71-10002A	1	
	25	FRAME UPPER	JG72-40045A	1	
	26	BRUSH ANTISTATIC	JG75-10004A	1	
	27	SPRING-COIL	JG70-40514A	1	
	28	ROLL PINCH	JG72-40663A	2	
	29	SHAFT PINCH	JF70-40521B	1	
	30	SUPPORT ADF	JG72-40043A	1	
	31	RUBBER ADF	JG73-10003A	1	
	32	HOLDER RUBBER	JG72-40044A	1	
	S1	SCREW, TAPTITE, PH, +, B, M3x6	6003-000165	18	

	Location No.	Description	SEC. Code	Q'ty	Remark
	S2	SCREW, TAPTITE, BH, +, B, M3x8	6003-000015	6	

∗ : Service not Available

MEMO

9-3. Base Assembly

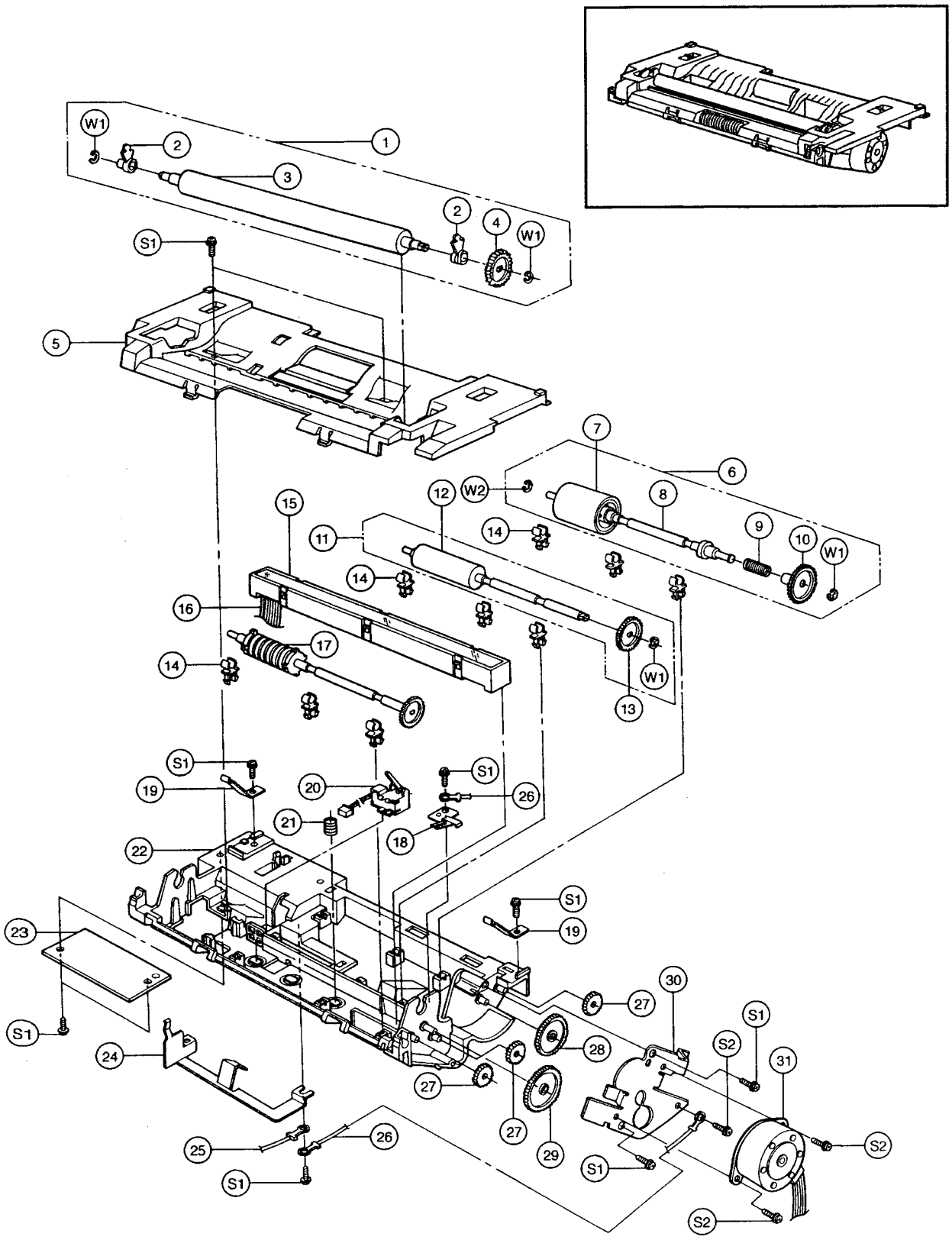


Base Assembly Parts List

	Location No.	Description	SEC. Code	Q'ty	Remark
		BASE UNIT	JG96-00002B	1	
	1	COVER, BASE	JG72-40016A	1	
	2	FELT INK	JG74-10505A	1	
	3	COVER, HARNESS	JG72-40055A	1	
	4	HARNESS, GROUND	*	1	BASE-SCAN
	5	GROUND BASE	JG70-10003A	1	
	6	TIE STOPPER	JG72-40717A	1	
	7	HARNESS, LIU-MJ	JG39-40132A	1	
	8	SPEAKER	JG96-00030B	1	
	9	FOOT RUBBER	JF72-41377A	2	
	10	PBA, LIU	JG92-00013A	1	
	11	HARNESS	JF39-40915A	1	MAIN-LIU
	12	MAIN BOARD	*	1	
	13	PBA, MAIN	JG92-00567A	1	SF4000
			JG92-00562A	1	SF4200
	14	BRK, INTERFACE	JG70-10002A	1	SF4200 ONLY
	15	CONNECTOR-DSUB : 9P	3701-000216	1	SF4200 ONLY
	16	CONNECVTOR-RIBBON : 36P	3702-001001	1	SF4200 ONLY
	17	HARNESS, MAIN-PRT	JG39-40019A	1	MAIN-PRINTER
	18	HARNESS, MAIN/SCAN	JG39-40018A	1	MAIN-SCAN
	19	HARNESS, MAIN-ASF LEVER SENSOR	JG39-40013A	1	LEVER
	20	HARNESS, MAIN/SMPS	JG39-40016A	1	MAIN-SMPS
	21	HARNESS, SMPS PRINTER B'D	*	1	SMPS
	22	SMPS, AC, 220-240VAC	JG44-10002A	1	
	23	CHASSIS MAIN	JG70-10001A	1	
	24	HARNESS, LIU-HOOK	*	1	
	S1	SCREW, TAPTITE, BH, +, B, M3x8	6003-000015	13	
	S2	SCREW, ASS'Y, MACH, WS, PH, +, M3x6	6006-000130	2	SF4200 ONLY
	S3	BOLT, HEX, 4-40, L=8.2, NI	6046-000114	2	SF4200 ONLY
	S4	SCREW, TAPTITE, PH, WS, +, M3x8	6003-000189	1	
	S5	SCREW, TAPTITE, BH, +, B, M3x10	6003-000196	2	

* : Service not Available

9-4. Scan Lower Unit Assembly

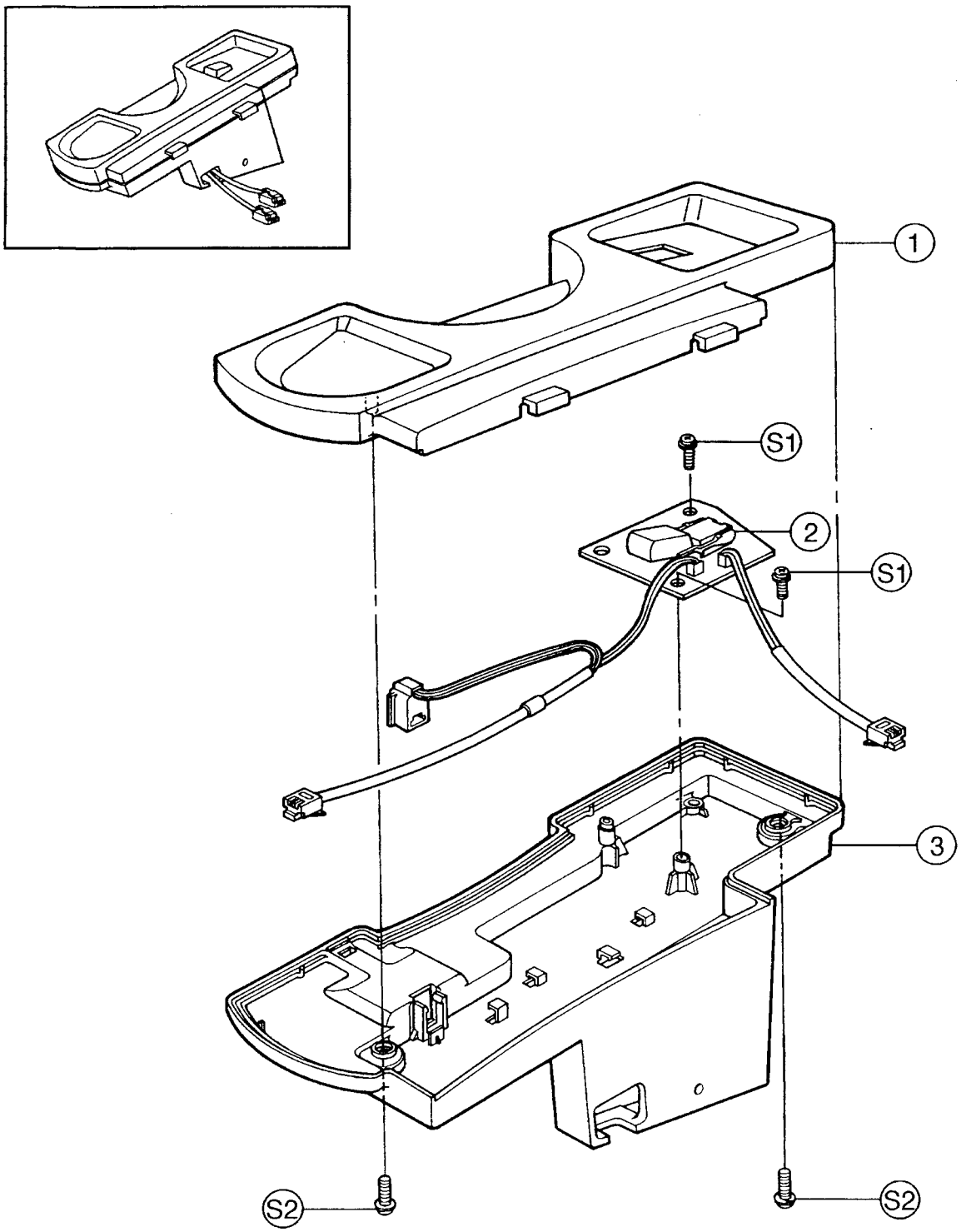


Scan Lower Unit Assembly Parts List

	Location No.	Description	SEC. Code	Q'ty	Remark
		SCAN, LOWER	JG96-00009B	1	
	1	WHITE ROLLER	JG97-00007A	1	
	2	BUSHING WHITE	*	2	
	3	ROLLER CIS	*	1	
	4	GEAR DRIVE (B4)	*	1	
	5	PAPER GUIDE	JG72-40039A	1	
	6	ADF ROLLER	JG97-00006A	1	
	7	ROLLER ADF	*	1	
	8	SHAFT ADF	*	1	
	9	SPRING CLUTCH	*	1	
	10	GEAR ADF	*	1	
	11	DRIVE ROLLER	JG97-00008A	1	
	12	ROLLER DRIVE	*	1	
	13	GEAR DRIVE (B4)	*	1	
	14	BUSHING TX (B4)	JG72-40744A	9	
	15	CIS, DL100-54C	895 390010AB	1	
	16	HARNESS, SC/CIS	JG39-40020A	1	
	17	SHAFT EXIT	JG72-40042A	1	
	18	GROUND, DRIVE	JG70-10006A	1	
	19	LOCKER-TX	JG64-30001A	2	
	20	INTERRUPTER	895 610012AA	1	
	21	SPRING-CS	JG61-70002A	2	
	22	FRAME LOWER	JG72-40037A	1	
	23	PBA, SCAN	JG92-00563A	1	
	24	NRP-GROUND CIS	JG71-10001A	1	
	25	HARNESS, GROUND	*	1	
	26	HARNESS, MOT GND	JG39-40014A	1	
	27	GEAR-SPUR	JG66-40001A	3	
	28	GEAR TRANS (B4)	JG72-40741A	1	
	29	GEAR-DOUBLE	JG66-40002A	1	
	30	BRACKET, MOTOR	JG70-10004A	1	
	31	MOTOR, STEP	3101-001002	1	
	S1	SCREW, TAPTITE, BH, +, B, M3×8	6003-000015	10	
	S2	SCREW, ASS'Y, MACH, WS, PH, +, M3×6	6006-000127	3	
	W1	RING C, ID3, OD7, T0.6	*	4	
	W2	RING C, ID5, OD11, T0.6	*	1	

* : Service not Available

9-5. Cradle Assembly

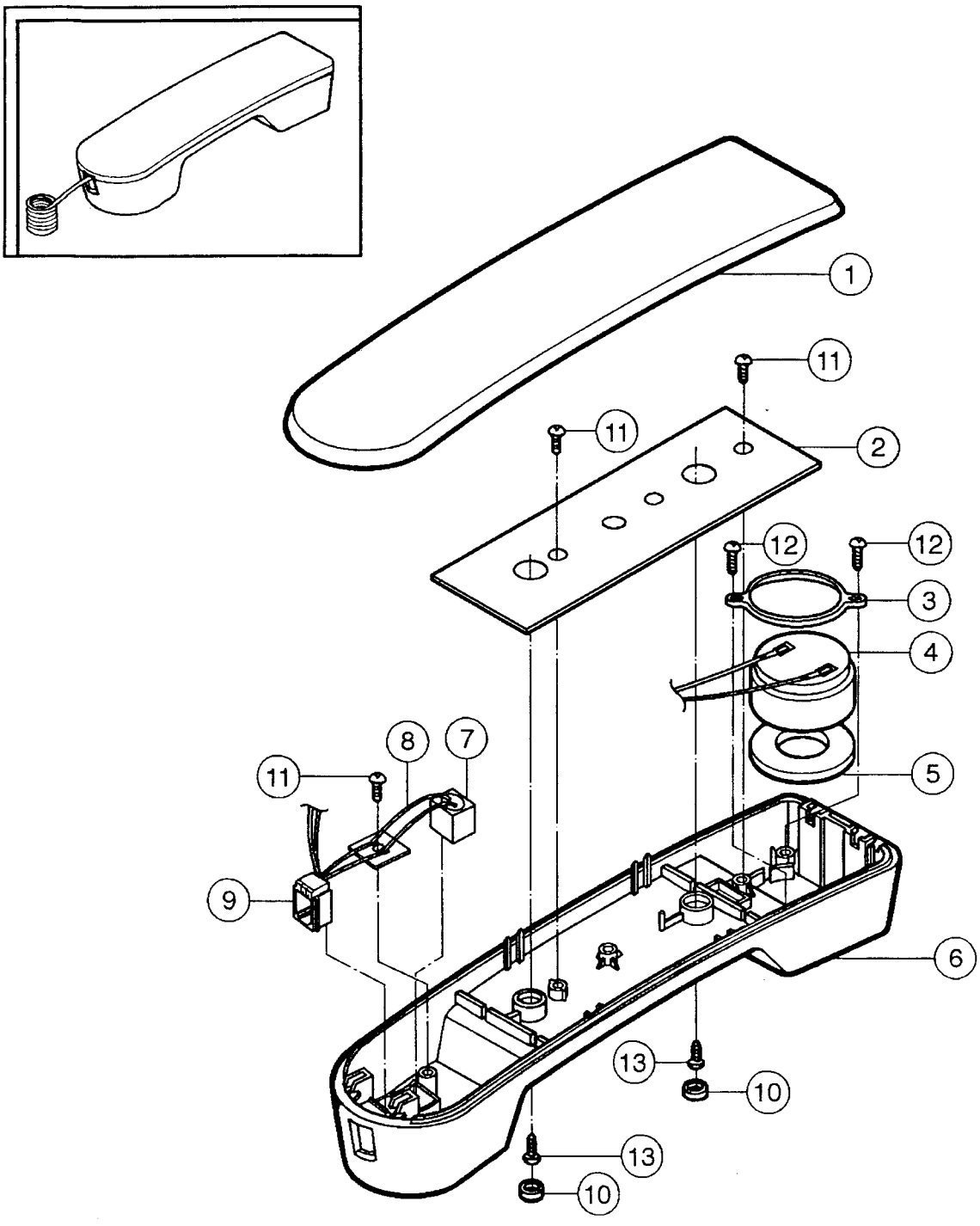


Cradle Assembly Parts List

	Location No.	Description	SEC. Code	Q'ty	Remark
		CRADLE	JG96-00004B	1	
	1	CRADLE-UPPER	JG72-40023A	1	
	2	PBA HOOK	JG92-00564A	1	
	3	CRADLE-LOWER	JG72-40024A	1	
	S1	SCREW, TAPTITE, BH, +, B, M3x6	6003-000117	2	
	S2	SCREW, TAPTITE, BH, +, B, M3x8	6003-000015	2	

* : Service not Available

9-6. Handset Assembly



Handset Assembly Parts List

	Location No.	Description	SEC. Code	Q'ty	Remark
		ASS'Y, HANDSET	JF96-00019A	1	
	1	HANDSET-UPPER	*	1	
	2	WEIGHT BALANCE	*	1	
	3	BRACKET-UNIT FIXING	*	1	
	4	AUDIO-RECEIVER, 160OHM, 98.5DB	*	1	
	5	MISCEL, RING O, ID17, OD35	*	1	
	6	HANDSET-LOWER	*	1	
	7	MIC ADAPTER-1625	*	1	
	8	AUDIO-MIC, 1.5V, 64DB	*	1	
	9	CBF-MODULAR, 200mm, 4P	*	1	
	10	HOLD-DUMMY	*	2	
	11	SCREW, TAPTITE, B, PH, +, M3, L6	*	3	
	12	SCREW, TAPTITE, B, PH, +, M3, L8	*	2	
	13	SCREW, TAPTITE, B, PH, +, M2, L6	*	2	

* : Service not Available

MEMO

10 Electrical Parts List

10-1 Main PBA

	No.	Description	Part Name	SEC Code	Remark
		- Capacitors -			
	C1	Electrolytic, 33 µF, M, 35 V, SMD		2402-000172	
	C2	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C3	Electrolytic, 100 µF, M, 16 V, SMD		2402-000168	
	C4	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C5	Electrolytic,10 µF, M, 16 V, SMD		2402-000176	
	C6	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C7	Electrolytic, 10 µF, M, 16 V		2402-000176	
	C8	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C9	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C10	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C11	Electrolytic, 4.7 µF, M, 35 V, SMD		2402-000173	
	C12	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C13	Electrolytic, 10 µF, M, 16 V, SMD		2402-000176	
	C15	Ceramic, Chip, 22 pF, J, 50 V		2203-000634	
	C16	Ceramic, Chip, 22 pF, J, 50 V		2203-000634	
	C18	Electrolytic, 22 µF, M, 16 V, SMD		2402-000135	
	C19	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C20	Ceramic, Chip, 18 pF, J, 50 V		2203-000429	
	C21	Ceramic, Chip, 39 pF, J, 50 V		2203-000858	
	C22	Ceramic, Chip, 1 nF, J, 50 V		2203-000455	
	C23	TA, Chip, 1 µF, M, 16 V		2404-000151	
	C24	Ceramic, Chip, 1 nF, J, 50 V		2203-000455	
	C25	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C26	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C27	Ceramic, Chip, 1 nF, J, 50 V		2203-000455	
	C28	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C29	Electrolytic, 10 µF, M, 35 V, SMD		2402-000117	
	C30	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C31	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C32	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C33	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C36	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C37	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C38	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C39	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C40	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C43	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	

	No.	Description	Part Name	SEC Code	Remark
	C59	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C60	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C61	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C63	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C64	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C65	Electrolytic, 2.2 µF, M, 50 V, SMD		2402-000130	
	C66	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C67	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C68	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C69	Electrolytic, 1 µF, M, SMD, 50 V		2402-000170	
	C70	Electrolytic, 4.7 µF, M, SMD, 35 V		2402-000173	
	C79	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C80	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C86	Ceramic, Chip, 22 pF, J, 50 V		2203-000634	
	C87	Ceramic, Chip, 22 pF, J, 50 V		2203-000634	
	C88	Ceramic, Chip, 1 nF, J, 50 V		2203-000455	
	C89	Ceramic, Chip, 1 nF, J, 50 V		2203-000455	
	C90	Ceramic, Chip, 1 nF, J, 50 V		2203-000455	
	C91	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C92	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C98	Ceramic, Chip, 15 nF, K, 50 V		2203-000374	
	C99	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C100	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C101	Ceramic, Chip, 680 pF, J, 50 V		2203-001132	
	C104	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C106	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C112	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C113	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C114	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C115	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C501	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C503	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C504	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C505	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C508	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C509	Ceramic, Chip, 1 nF, J, 50 V		2203-000455	
	C510	Ceramic, Chip, 1 nF, J, 50 V		2203-000455	
	C511	Ceramic, Chip, 1 nF, J, 50 V		2203-000455	
	C512	Ceramic, Chip, 1 nF, J, 50 V		2203-000455	
	C513	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C518	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C519	Ceramic, Chip, 180 pF, J, 50 V		2203-000408	

	No.	Description	Part Name	SEC Code	Remark
	C520	Ceramic, Chip, 180 pF, J, 50 V		2203-000408	
	C521	Ceramic, Chip, 47 pF, J, 50 V		2203-001002	
	C522	Ceramic, Chip, 47 pF, J, 50 V		2203-001002	
	C523	Ceramic, Chip, 47 pF, J, 50 V		2203-001002	
	C524	Ceramic, Chip, 100 nF, Z, 50 V		2203-000192	
	C525	Ceramic, Chip, 1 nF, J, 50 V		2203-000455	
	C526	Ceramic, Chip, 470 pF, J, 50 V		2203-000953	
	C527	Ceramic, Chip, 470 pF, J, 50 V		2203-000953	
	C528	Ceramic, Chip, 180 pF, J, 50 V		2203-000408	
		- Diodes -			
	D1	Diode, Schottky, 25 V, SMD		0404-000112	
	D2	Diode, Schottky, 25 V, SMD		0404-000112	
	D3	Diode, Switching		0401-000116	
	D4	Diode, Switching		0401-000116	
	D5	Diode, Schottky, 25 V, SMD		0404-000112	
	D6	Diode, Switching		0401-000116	
	D7	Diode, Switching		0401-000116	
		- IC's -			
	U1	MPU, IFC		JG09-10001A	
	U2	MOS, Analog Switch, GD4052BD		1001-000116	
	U4	LIN, TR Array, TD62503F		881 862503GA	
	U5	LIN, Modem, R96DFXL		1205-000246	
	U6	LIN, OP AMP, KA4558D/T		1201-000189	
	U8	LIN, OP AMP, KA4558D/T		1201-000189	
	U9	MEM, EPROM, 256Kx8, NM27C020Q-90		1102-001001	
	U9-1	Connector, Socket, 32 P, WSDIF-32T		3704-000255	
	U10	MEM, SRAM, 32Kx8, KM62256CLG-7		1106-000197	
	U11	MEM, DRAM, 512Kx8, KM48C512LJ-8		1105-000181	
	U12	Connector, Socket, 28 P, WSOJ-28T-SM		3704-001005	
	U13	LIN, CMOS Logic, TC4053BF		0801-000206	
	U14	LIN, CMOS Logic, TC4053BF		0801-000206	
	U15	LIN, CMOS Logic, TC4053BF		0801-000206	
	U16	LIN, OP AMP, TL084CD		1201-000236	
	U17	LIN, Voltage Detector, PST520C		1202-000159	
	U18	LIN, Audio AMP, MC34119P		1201-000105	
	U22	CMOS Logic, Buffer, 74HC244		0801-000945	
	U25	ASIC, PEGASUS		JG13-10001A	
	U26	CMOS Logic, Inverter, 74HC14		0801-000311	
	U27	CMOS Logic, Buffer, 74HC244		0801-000945	
	U30	CMOS Logic, Buffer, 74HC244		0801-000945	
	U32	CMOS Logic, Buffer, 74HC244		0801-000945	
	U33	CMOS Logic, Inverter, 74HC14		0801-000311	

	No.	Description	Part Name	SEC Code	Remark
	U36	CMOS Logic, Inverter, 74HC273		0801-000683	
		- Resistors -			
	R1	Chip, 100 ohm, 5 %, 1/10 W		2007-000290	
	R2	Chip, 100 ohm, 5 %, 1/10 W		2007-000290	
	R4	Chip, 10 kom, 5 %, 1/10 W		2007-000300	
	R5	Chip, 0 ohm, 5 %, 1/8 W		911 710007CR	
	R6	Chip, 200 ohm, 5 %, 1/10 W		911 732007BS	
	R7	Chip,10 kohm, 5 %, 1/10 W		2007-000300	
	R8	Chip, 200 ohm, 5 %, 1/10 W		911 732007BS	
	R9	Chip, 39 kohm, 5 %, 1/10 W		2007-000830	
	R10	Chip, 100 kohm, 5 %, 1/10 W		2007-000282	
	R11	Chip, 200 ohm, 5 %, 1/10 W		911 732007BS	
	R12	Chip, 2.2 kohm, 5 %, 1/10 W		2007-000493	
	R13	Chip, 2.2 kohm, 5 %, 1/10 W		2007-000493	
	R14	Chip, 2.2 kohm, 5 %, 1/10 W		2007-000493	
	R15	Chip, 2.2 kohm, 5 %, 1/10 W		2007-000493	
	R16	Chip, 100 kohm, 5 %, 1/10 W		2007-000282	
	R17	Chip, 180 ohm, 5 %, 1/10 W		2007-000449	
	R18	Chip, 330 ohm, 5 %, 1/10 W		2007-000766	
	R19	Chip, 10 Mohm, 5 %, 1/10 W		2007-000304	
	R21	Chip, 10 kohm, 5 %, 1/10 W		2007-000300	
	R22	Chip, 10 kohm, 5 %, 1/10 W		2007-000300	
	R23	Chip, 10 kohm, 5 %, 1/10 W		2007-000300	
	R25	Chip, 20 ohm, 5 %, 1/10 W		2007-000551	
	R26	Chip, 150 ohm, 5 %, 1/10 W		2007-000401	
	R27	Chip, 86.6 kohm, 5 %, 1/10 W		2007-001220	
	R28	Chip, 17.4 kohm, 1%,1/10 W		2007-000435	
	R29	Chip, 10 kohm, 5 %, 1/10 W		2007-000300	
	R30	Chip, 86.6 kohm, 5 %, 1/10 W		2007-001220	
	R31	Chip, 3 kohm, 5 %, 1/10 W		2007-000844	
	R32	Chip, 100 kohm, 1 %, 1/10 W		2007-000277	
	R33	Chip, 47.5 kohm, 1%, 1/10 W		2007-000920	
	R34	Chip, 10 kohm, 5 %, 1/10 W		2007-000300	
	R35	Chip, 10 kohm, 5 %, 1/10 W		2007-000300	
	R36	Chip, 330 ohm, 5 %, 1/10 W		2007-000766	
	R37	Chip, 1 Mohm, 5 %, 1/10 W		2007-000477	
	R38	Chip, 150 kohm, 5 %, 1/10 W		2007-000395	
	R39	Chip, 330 kohm, 5 %, 1/10 W		2007-000757	
	R40	Chip, 30 kohm, 5 %, 1/10 W		2007-000738	
	R65	Chip, 150 kohm, 5 %, 1/10 W		2007-000395	
	R68	Chip, 10 kohm, 5 %, 1/10 W		2007-000300	
	R69	Chip, 12 kohm, 5 %, 1/10 W		2007-000355	

	No.	Description	Part Name	SEC Code	Remark
	R70	Chip, 1 kohm, 5 %, 1/10 W		2007-000468	
	R71	Chip, 75 kohm, 5 %, 1/10 W		911 757507BS	
	R72	Chip, 270 kohm, 5 %, 1/10 W		2007-000635	
	R73	Chip, 1 Mohm, 5 %, 1/10 W		2007-000477	
	R75	Chip, 120 ohm, 5 %, 1/10 W		911 731207BS	
	R77	Chip, 1 kohm, 5 %, 1/10 W		2007-000468	
	R78	Chip, 3 kohm, 5 %, 1/10 W		2007-000844	
	R79	Chip, 75 kohm, 5 %, 1/10 W		911 757507BS	
	R80	Chip, 68 kohm, 5 %, 1/10 W		911 756807BS	
	R81	Chip, 30 kohm, 5 %, 1/10 W		2007-000738	
	R82	Chip, 68 kohm, 5 %, 1/10 W		911 756807BS	
	R85	Chip, 270 kohm, 5 %, 1/10 W		2007-000635	
	R86	Chip, 150 kohm, 5 %, 1/10W		2007-000395	
	R87	Chip, 75 kohm, 5 %, 1/10 W		911 757507BS	
	R88	Chip, 10 kohm, 5 %, 1/10 W		2007-000300	
	R89	Chip, 100 kohm, 5 %, 1/10 W		2007-000282	
	R90	Chip, 56 kohm, 5 %,1/10 W		2007-001039	
	R91	Chip, 18 kohm, 5 %, 1/10 W		2007-000457	
	R92	Chip, 200 ohm, 5 %, 1/10 W		911 732007BS	
	R94	Chip, 200 ohm, 5 %, 1/10 W		911 732007BS	
	R95	Chip, 200 ohm, 5 %, 1/10W		911 732007BS	
	R96	Chip, 1 kohm, 5 %, 1/10 W		2007-000468	
	R97	Chip, 220 ohm, 5 %, 1/10 W		2007-000572	
	R98	Chip, 220 ohm, 5 %, 1/10 W		2007-000572	
	R99	Chip, 10 kohm, 5 %, 1/10 W		2007-000300	
	R100	Chip, 10 kohm, 5 %, 1/10 W		2007-000300	
	R102	Chip, 330 kohm, 5 %, 1/10 W		2007-000757	
	R105	Chip, 10 kohm, 5 %, 1/10W		2007-000300	
	R110	Chip, 200 ohm, 5 %, 1/10W		911 732007BS	
	R112	Chip, 5.1 kohm, 5 %, 1/10 W		2007-000964	
	R113	Chip, 5.1 kohm, 5 %, 1/10 W		2007-000964	
	R114	Chip, 5.1 kohm, 5 %, 1/10 W		2007-000964	
	R115	Chip, 5.1 kohm, 5 %, 1/10 W		2007-000964	
	R116	Chip, 5.1 kohm, 5 %, 1/10 W		2007-000964	
	R117	Chip, 1 kohm, 5 %, 1/10 W		2007-000468	
	R118	Chip, 1 kohm, 5 %, 1/10 W		2007-000468	
	R119	Chip, 1 kohm, 5 %, 1/10 W		2007-000468	
	R120	Chip, 1 kohm, 5 %, 1/10 W		2007-000468	
	R121	Chip, 1 kohm, 5 %, 1/10 W		2007-000468	
	R122	Chip, 1 kohm, 5 %, 1/10 W		2007-000468	
	R123	Chip, 1 kohm, 5 %, 1/10 W		2007-000468	
	R124	Chip, 1 kohm, 5 %, 1/10 W		2007-000468	

	No.	Description	Part Name	SEC Code	Remark
	R125	Chip, 100 ohm, 5%, 1/10 W		2007-000290	
	R126	Chip, 100 ohm, 5%, 1/10 W		2007-000290	
	R127	Chip, 100 ohm, 5%, 1/10 W		2007-000290	
	R128	Chip, 100 ohm, 5%, 1/10 W		2007-000290	
	R129	Chip, 100 ohm, 5%, 1/10 W		2007-000290	
	R130	Chip, 100 ohm, 5%, 1/10 W		2007-000290	
	R131	Chip, 100 ohm, 5%,1/10 W		2007-000290	
	R132	Chip, 100 ohm, 5%,1/10 W		2007-000290	
	R133	Chip, 0 ohm, 5 %, 1/10 W		911 710007BS	
	R134	Chip, 0 ohm, 5 %, 1/10 W		911 710007BS	
	R136	Chip, 4.7 kohm, 5%,1/10 W		2007-000872	
	R137	Chip, 4.7 kohm, 5%,1/10 W		2007-000872	
	R138	Chip, 4.7 kohm, 5%,1/10 W		2007-000872	
	R139	Chip, 4.7 kohm, 5%,1/10 W		2007-000872	
	R140	Chip, 100 kohm, 5 %, 1/10 W		2007-000282	
	R141	Chip, 10 kohm, 5 %, 1/10 W		2007-000300	
	R146	Chip, 100 kohm, 5 %, 1/10 W		2007-000282	
	R147	Chip, 10 kohm, 5 %, 1/10 W		2007-000300	
	R150	Chip, 5.6 kohm, 5 %, 1/10 W		2007-000981	
	R151	Chip, 0 ohm, 5 %, 1/10 W		911 710007BS	
	R153	Chip, 100 ohm, 5 %, 1/10 W		2007-000290	
	R154	Chip, 100 ohm, 5 %, 1/10 W		2007-000290	
	R157	Chip, 0 ohm, 5 %, 1/10 W		911 710007BS	
	R159	Chip, 270 ohm, 5 %, 1/10 W		2007-000642	
	R160	Chip, 0 ohm, 5 %, 1/10 W		911 710007BS	
	R167	Chip, 0 ohm, 5 %, 1/10 W		911 710007BS	
	R169	Chip, 10 kohm, 5 %, 1/10W		2007-000300	
	R170	Chip, 10 kohm, 5 %, 1/10W		2007-000300	
	R171	Chip, 10 kohm, 5 %, 1/10W		2007-000300	
	R172	Chip, 10 kohm, 5 %, 1/10 W		2007-000300	
	R173	Chip, 1 kohm, 5 %,1/10 W		2007-000468	
	R174	Chip, 1 kohm, 5 %,1/10 W		2007-000468	
	R181	Chip, 0 ohm, 5 %, 1/10 W		911 710007BS	
	R193	Chip, 820 ohm, 5 %, 1/10 W		2007-001201	
	R194	Chip, 820 ohm, 5 %, 1/10 W		2007-001201	
	R195	Chip, 820 ohm, 5 %, 1/10 W		2007-001201	
	R196	Chip, 820 ohm, 5 %, 1/10 W		2007-001201	
	R197	Chip, 0 ohm, 5 %, 1/10 W		911 710007BS	
	R198	Chip, 0 ohm, 5 %, 1/10 W		911 710007BS	
	R200	Chip, 100 ohm, 5 %, 1/10 W		2007-000290	
	R201	Chip, 820 ohm, 5 %, 1/10 W		2007-001201	
	R202	Chip, 100 ohm, 5 %, 1/10 W		2007-000290	

	No.	Description	Part Name	SEC Code	Remark
		- Miscellaneous -			
	BAT	Battery-Li, 3 V, 200 mA		953 130008AD	
	JP1	Connector, Header, Nowall		3711-001422	
	JP1-1	Connector, Shunt, 2 P		3710-000104	
	L2	Inductor, Chip, 390 µH, 10 %		2703-000204	
	L28	Inductor, Chip, 3.3 µH, 10 %		2703-000185	
	L30	Core, Ferrite Bead		3301-000370	
	L31	Resistor, Chip, 0 ohm, 5 %, 1/8 W		911 710007CR	
	L32	Core, Ferrite Bead		3301-000370	
	PCB	PCB, Main, Blank		JG41-10003A	
	P1	Connector, Box Header, 22 P, 2R, ST		3711-002002	
	P2	Connector, Wall Header, 11 P, 3 Wall, ST		3711-000404	
	P4	Connector, Box Header, 28 P, 2 R, ST		3711-002005	
	P6	Connector, Wall Header, 2 P, 3 Wall, ST		3711-000443	
	P7	Connector, Flat Cable, 20 P, ST		3708-000208	
	P8	Connector, Wall Header, 2 P, 3 Wall, ST		3711-000443	
	Q1	TR, Small signal, PNP, KSA928A		0501-000317	
	Y1	Crystal, 0.032768 MHz		941 110012AA	
	Y2	Crystal, 24.0014 MHz		941 110092BB	
	Y4	OSC-Clock, 18 MHz		2804-001001	

10-2. LIU PBA

	No.	Description	Part Name	SEC Code	Remark
		Assembly, LIU PCB		**JG92-00013A**	
		- Arresters -			
	MIS1	Surge Absorber, 300 V, 15 %, 2 P		4715-000127	
	MIS2	Surge Absorber, 600 v, 15 %, 2 P		4715-000127	
	MIS3	Surge Absorber, 600 v, 15 %, 2 P		4715-000127	
	MIS4	Surge Absorber, 600 v, 15 %, 2 P		4715-000127	
		- Capacitors -			
	C1	Electrolytic, 100 µF, M, 16 V, BP		2401-000042	
	C2	Electrolytic, 100 µF, M, 16 V, BP		2401-000042	
	C4	Electrolytic, 10 µF, M, 50 V, BP		2401-000486	
	C5	Electrolytic, 10 µF, M, 50 V, BP		2401-000486	
	C6	Electrolytic, 10 µF, M, 50 V, BP		2401-000486	
	C8	Electrolytic, 4.7 µF, M, 50 V, BP		2401-001277	
	C9	Electrolytic, 2.2 µF, M, 50 V, GP		2401-000660	
	C15	Electrolytic, 22 µF, M, 50 V, BP		2401-000958	
	C16	Electrolytic, 3.3 µF, M, 50 V, BP		2401-001014	
	C17	Electrolytic, 3.3 µF, M, 50 V, BP		2401-001014	
	C18	Electrolytic, 3.3 µF, M, 35 V, GP		2401-001008	
	C19	Electrolytic, 0.22 µF, M, 50 V, BP		2401-000757	
	C20	Electrolytic, 0.33 µF, M, 50 V, GP		2401-001087	
	C21	MPEP, 100 nF, K, 250 V		2305-000128	
	C22	MPEP, 22 nF, K, 250 V		2305-000297	
	C23	MPEP, 22 nF, K, 250 V		2305-000297	
	C24	MPEP, 4.7 nF, K, 400 V		2305-000378	
	C25	MPEP, 4.7 nF, K, 400 V		2305-000378	
	C26	MPEP, 1 µF, K, 250 V		2305-000505	
	C27	Ceramic, Chip, 15 nF, K, 50 V		2203-000376	
	C30	Ceramic, Chip, 100 nF, K, 50 V		2203-000208	
	C33	Ceramic, Chip, 100 nF, K, 50 V		2203-000208	
	C34	Ceramic, Chip, 100 nF, K, 50 V		2203-000208	
	C35	Ceramic, Chip, 100 nF, K, 50 V		2203-000208	
	C36	Ceramic, Chip, 100 nF, K, 50 V		2203-000208	
	C37	Ceramic, Chip, 100 nF, K, 50 V		2203-000208	
	C38	Ceramic, Chip, 68 nF, K, 50 V		2203-001145	
	C39	Ceramic, Chip, 47 nF, K, 50 V		2203-001511	
	C40	Ceramic, Chip, 10 nF, K, 50 V		2203-000262	
	C41	Ceramic, Chip, 33 nF, K, 50 V		2203-000805	
	C42	Ceramic, Chip, 33 nF, K, 50 V		2203-000805	
	C43	Ceramic, Chip, 10 nF, K, 50 V		2203-000262	
	C45	Ceramic, Chip, 3.3 nF, K, 50 V		2203-000717	

	No.	Description	Part Name	SEC Code	Remark
	C49	Ceramic, Chip, 1 nF, K, 50 V		2203-001469	
	C53	Ceramic, Chip, 120 pF, J, 50 V		2203-000319	
	C63	Ceramic, Chip, 33 nF, K, 50 V		2203-000805	
	C64	Resistor-Chip, 0 ohm, J, 1/8 W		911 710007CR	
	C67	Ceramic, Chip, 4.7 nF, K, 50 V		2203-001490	
	C68	Ceramic, Chip, 75 pF, J, 50 V		2203-001194	
	C69	Ceramic, Chip, 1 nF, K, 50 V		2203-001469	
	C70	Ceramic, Chip, 68 nF, K, 50 V		2203-001145	
		- Diodes -			
	BD1	Bridge, DF06M		0402-000108	
	D1	TRS, 1.5KE15		0406-000102	
	D2	Array, 1SS226		0407-000122	
	D3	Array, 1SS226		0407-000122	
	D4	Array, 1SS226		0407-000122	
	D5	Array, 1SS226		0407-000122	
	D11	Sig, 1N4148		0404-000140	
	D12	Sig, 1N4148		0404-000140	
	D13	Sig, 1N4148		0404-000140	
	ZD1	Zener, 4.7 V		0403-000280	
	ZD2	Zener, 4.7 V		0403-000280	
	ZD5	Zener, 5.1 V, 1N4733A		0403-000525	
	ZD6	Zener, 5.1 V, 1N4733A		0403-000525	
	ZD7	Zener, 18 V, 1N4746A		0403-000153	
	ZD8	Zener, 18 V, 1N4746A		0403-000153	
	ZD9	Zener, 12 V, 1N4742A		0403-000149	
		- IC's -			
	U1	Relay, PhotoMos, LCA190		3502-000102	
	U2	OPT-Coupler, TR, PC817		895 530002AA	
	U4	OPT-Coupler, TR		895 530002AA	
	U5	Photo-Coupler, TR		0604-000118	
	U8	Line Interface, L3845		1205-000225	
	U9	Transmission, TEA1067		1205-000357	
	U10	OP Amp, 4558		1201-000422	
		- Resistors -			
	R4	Chip, 470 kohm, 5 %, 1/8W		2007-000927	
	R5	Chip, 300 kohm, 5 %, 1/8W		2007-000725	
	R7	Chip, 220 kohm, 5 %, 1/8W		2007-000568	
	R9	Chip, 150 kohm, 5 %, 1/8W		2007-000397	
	R10	Chip, 130 kohm, 5 %, 1/8W		2007-000927	
	R17	Chip, 100 kohm, 5 %, 1/8 W		2007-000285	
	R18	Chip, 120 kohm, 5 %, 1/8W		2007-000341	
	R20	Chip, 27 kohm, 5 %, 1/8W		2007-000656	

	No.	Description	Part Name	SEC Code	Remark
	R21	Chip, 22 kohm, 5 %, 1/8W		2007-000589	
	R24	Chip, 10 kohm, 5 %, 1/8W		2007-000303	
	R25	Chip, 10 kohm, 5 %, 1/8W		2007-000303	
	R29	Chip, 10 kohm, 5 %, 1/8W		2007-000303	
	R32	Chip, 3.9 kohm, 5 %, 1/8W		911 743907CR	
	R33	Chip, 3.6 kohm, 5 %, 1/8W		2007-000705	
	R36	Chip, 1 kohm, 5 %, 1/8W		2007-000472	
	R37	Chip, 1 kohm, 5 %, 1/8W		2007-000472	
	R38	Chip, 1 kohm, 5 %, 1/8W		2007-000472	
	R39	Chip, 910 ohm, 5 %, 1/8W		2007-001241	
	R40	Chip, 820 ohm, 5 %, 1/8 W		2007-001203	
	R41	Chip, 680 ohm, 5 %, 1/8 W		2007-001121	
	R42	Chip, 200 ohm, 5 %, 1/8W		2007-000542	
	R43	Chip, 120 ohm, 5 %, 1/8W		2007-000346	
	R44	Chip, 330 ohm, 5 %, 1/8W		2007-000768	
	R46	Chip, 39 ohm, 5 %, 1/8 W		2007-000840	
	R47	Chip, 22 ohm, 5 %, 1/8 W		2007-000598	
	R52	Chip, 0 ohm, 5 %, 1/8 W		911 710007CR	
	R60	Chip, 0 ohm, 5 %, 1/8 W		911 710007CR	
	R64	Chip, 0 ohm, 5 %, 1/8 W		911 710007CR	
	R65	Chip, 0 ohm, 5 %, 1/8 W		911 710007CR	
	R71	Chip, 10 kohm, 5 %, 1/8 W		2007-000303	
	R74	Carbon, 68 ohm, 5 %, 1/4 W		2001-000935	
	R75	Carbon, 20 ohm, 5 %, 1/4 W		2001-000502	
	R78	Carbon, 0 ohm, 5 %, 1/4 W		2001-000436	
	R79	Carbon, 0 ohm, 5 %, 1/4 W		2001-000436	
		- Miscellaneous -			
	CN2	Connector, FPC/FC/PIC, 20 P		3708-000202	
	CN3	Connector, Header, 3 Wall, 12 P		3711-000411	
	HIC1	IC, Hybrid, HFS113F017A		JF13-10067A	
	L1	Trans, Line Filter		JF26-10052A	
	L2	Line Filter, 60 µH		JF27-60051A	
	L3	Line Filter, 60 µH		JF27-60051A	
	L4	Line Filter, 60 µH		JF27-60051A	
	L5	Line Filter, 60 µH		JF27-60051A	
	L6	RF, 4 mH		JF27-30053A	
	L7	RF, 4 mH		JF27-30053A	
	L8	Inductor, Chip, 2 kohm		3301-000369	
	L9	Inductor, Chip, 2 kohm		3301-000369	
	L10	Inductor, Chip, 2 kohm		3301-000369	
	L11	Inductor, Chip, 2 kohm		3301-000369	
	PCB	PCB, LIU		JG41-10013A	

	No.	Description	Part Name	SEC Code	Remark
	MJ1	Jack, Modular, 6P/4C		3722-000246	
	RE1	Relay, Miniature, 12 V		3501-000139	
	RE2	Relay, Miniature, 12 V		3501-000139	
	T1	Trans, AF, 600//600		923 003013AA	
	V1	Varistor, 82 V, Disc		1405-000170	
	V2	Varistor, 82 V, Disc		1405-000170	

10-3 OPE PBA

	No.	Description	Part Name	SEC Code	Remark
		- Capacitors -			
	C1	Electrolytic, 10 µF, M, 16 V		2401-000414	
	C2	Ceramic, 100 nF, Z, 25 V		2203-000183	
	C3	Ceramic, 100 pF, J, 50 V		2203-000242	
	C4	Ceramic, 100 pF, J, 50 V		2203-000242	
	C5	Ceramic, 100 nF, Z, 25 V		2203-000183	
	C6	Ceramic, 100 nF, Z, 25 V		2203-000183	
	C7	Ceramic, 47 pF, J, 50 V		2203-001005	
	C8	Ceramic, 47 pF, J, 50 V		2203-001005	
	C9	Ceramic, 100 nF, Z, 25 V		2203-000183	
	C10	Ceramic, 220 pF, J, 50 V		2203-000597	
	C11	Ceramic, 220 pF, J, 50 V		2203-000597	
	C12	Ceramic, 220 pF, J, 50 V		2203-000597	
	C13	Ceramic, 100 nF, Z, 25 V		2203-000183	
		- Diodes -			
	D1	Schottky, RB420D		0404-000112	
	D2	Schottky, RB420D		0401-000112	
	D3	Schottky, RB420D		0401-000112	
	D4	Schottky, RB420D		0401-000112	
	D5	Schottky, RB420D		0401-000112	
	D6	Schottky, RB420D		0401-000112	
	D7	Schottky, RB420D		0401-000112	
	D8	Switching, MMSD914T1		0401-000116	
	LED1	LED, Chip, Red		0601-000208	
	LED2	LED, Chip, Green		895-190005GA	
	LED3	LED, Chip, Green		895-190005GA	
	LED4	LED, Chip, Green		895-190005GA	
	LED5	LED, Chip, Green		895-190005GA	
	LED6	LED, Chip, Green		895-190005GA	
	LED7	LED, Chip, Green		895-190005GA	
	LED8	LED, Chip, Green		895-190005GA	
		- Resistors -			
	R1	Chip, 200 ohm, 5 %, 1/8 W		2007-000542	
	R3	Chip, 330 ohm, 5 %, 1/8 W		2007-000768	
	R4	Chip, 330 ohm, 5 %,1/8 W		2007-000768	
	R4	Chip, 330 ohm, 5 %,1/8 W		2007-000768	
	R5	Chip, 330 ohm, 5 %,1/8 W		2007-000768	
	R6	Chip, 330 ohm, 5 %,1/8 W		2007-000768	
	R7	Chip, 330 ohm, 5 %,1/8 W		2007-000768	

	No.	Description	Part Name	SEC Code	Remark
	R8	Chip, 330 ohm, 5 %,1/8 W		2007-000768	
	R9	Chip, 330 ohm, 5 %,1/8 W		2007-000768	
	R11	Chip, 200 ohm, 5 %, 1/8 W		2007-000542	
	R12	Chip, 10 kohm, 5 %, 1/8 W		2007-000303	
	R13	Chip, 22 kohm, 5 %, 1/8 W		2007-000589	
	R14	Chip, 680 ohm, 5 %, 1/8 W		2007-001121	
	R15	Chip, 10 kohm, 5 %, 1/8W		2007-000303	
	R16	Chip, 22 kohm, 5 %, 1/8 W		2007-000589	
	R17	Chip, 22 kohm, 5 %, 1/8 W		2007-000589	
	R18	Chip, 22 kohm, 5 %, 1/8 W		2007-000589	
	R19	Chip, 22 kohm, 5 %, 1/8 W		2007-000589	
	R20	Chip, 22 kohm, 5 %, 1/8 W		2007-000589	
	R21	Chip, 22 kohm, 5 %, 1/8 W		2007-000589	
	R22	Chip, 22 kohm, 5 %, 1/8 W		2007-000589	
	R23	Chip, 22 kohm, 5 %, 1/8 W		2007-000589	
	R24	Chip, 200 ohm, 5 %, 1/8 W		2007-000542	
	R25	Chip, 150 ohm, 5 %, 1/8 W		2007-000403	
		- Miscellaneous -			
	J1	Resistor, Chip, 0 ohm, 5 %, 1/8 W		911-710007CR	
	J2	Resistor, Chip, 0 ohm, 5 %, 1/8W		911-710007CR	
	J3	Resistor, Chip, 0 ohm, 5 %, 1/8 W		911-710007CR	
	J5	Resistor, Chip, 0 ohm, 5 %, 1/8 W		911-710007CR	
	J6	Resistor, Chip, 0 ohm, 5 %, 1/8 W		911-710007CR	
	J7	Resistor, Chip, 0 ohm, 5 %, 1/8 W		911-710007CR	
	J8	Resistor, Chip, 0 ohm, 5 %, 1/8 W		911-710007CR	
	J9	Resistor, Chip, 0 ohm, 5 %, 1/8 W		911-710007CR	
	J10	Resistor, Chip, 0 ohm, 5 %, 1/8 W		911-710007CR	
	J11	Resistor, Chip, 0 ohm, 5 %, 1/8 W		911-710007CR	
	J12	Resistor, Chip, 0 ohm, 5 %, 1/8 W		911-710007CR	
	J13	Resistor, Chip, 0 ohm, 5 %, 1/8 W		911-710007CR	
	J14	Resistor, Chip, 0 ohm, 5 %, 1/8 W		911-710007CR	
	J15	Resistor, Chip, 0 ohm, 5 %, 1/8 W		911-710007CR	
	J16	Resistor, Chip, 0 ohm, 5 %, 1/8 W		911-710007CR	
	JP1	Wire, Jumper		3812-000101	
	JP2	Wire, Jumper		3812-000101	
	JP3	Wire, Jumper		3812-000101	
	JP4	Wire, Jumper		3812-000101	
	JP5	Wire, Jumper		3812-000101	
	JP6	Wire, Jumper		3812-000101	
	JP7	Wire, Jumper		3812-000101	
	JP8	Wire, Jumper		3812-000101	
	JP9	Wire, Jumper		3812-000101	

	No.	Description	Part Name	SEC Code	Remark
	JP10	Wire, Jumper		3812-000101	
	JP11	Wire, Jumper		3812-000101	
	JP12	Wire, Jumper		3812-000101	
	PCB	PCB, OPE		JG41-10004A	
	S1	Interrupter		895-610013AA	
	U1	IC, MPU, Mask, Z8601		JF09-10052A	
	U3	IC, TTL, OR Gate, DM74LS32M		0803-000884	
	Y1	Resonator, Ceramic, 7.37 MHz		2802-000185	

10-4 HOOK PBA

No	Description	Part Name	SEC Code	Remark
PCB	PCB, HOOK		JG41-10006A	
SW1	Switch, Hook, DPDT (IVORY)	SPPY120924A	3409-000111	

10-5 SCAN PBA

	No.	Description	Part Name	SEC Code	Remark
		- Capacitors -			
	C1	Ceramic, Chip, 10 nF, Z, 50 V		2201-000162	
	C2	Ceramic, Chip, 100 nF, Z, 50 V		2201-000737	
	C3	Ceramic, Chip, 150 pF, K, 50 V		2201-000230	
	C4	Ceramic, Chip, 150 pF, K, 50 V		2201-000230	
	C5	Ceramic, Chip, 150 pF, K, 50 V		2201-000230	
		- Connectors -			
	CN2	Connector, Wall Header, 3 P		3711-000452	
	CN3	Connector, Wall Header, 6 P		3711-000496	
	CN4	Connector, Wall Header, 10 P		3711-000398	
	CN5	Connector, Wall Header, 7 P		3711-000503	
	CN6	Connector, Wall Header, 7 P		3711-000503	
	CN7	Connector, Wall Header, 5 P		3711-000484	
	CN8	Connector, Box Header, 22 P		3711-002002	
		- Resistors -			
	R1	Metal, 3.6 kohm, 5 %, 1/8 W		2004-000719	
	R2	Metal, 3.6 kohm, 5 %, 1/8 W		2004-000719	
	R3	Metal, 1 kohm, 5 %, 1/8 W		2004-000437	
	R4	Metal, 100 ohm, 5 %, 1/8 W		2004-000208	
	R5	Metal, 100 ohm, 5 %, 1/8 W		2004-000208	
	R6	Metal, 100 ohm, 5 %, 1/8 W		2004-000208	
	R7	Metal, 100 ohm, 5 %, 1/8 W		2004-000208	
		- Miscellaneous -			
	PCB	PCB, SCAN		JG41-10002A	
	Q1	TR, Small Signal, NPN, MPS2222		0501-000485	
	Q2	TR, Darlington, PNP, TIP127		0503-000135	
	ZD1	Zener, 18 V, 1N4746A		0403-000153	
	ZD2	Zener, 18 V, 1N4746A		0403-000153	
	U1	TR Array, TD62308BP-1		0506-001001	

10-6 Others

No	Description	Part Name	SEC Code	Remark
CIS	CIS	SIS216-2M03H	895-390010AA	
LCD	LCD, 16X2 Line		JG07-20001A	
	Wire Harness, CIS-Scan, 10 P		JG39-40020A	
	Wire Harness, Lever Switch		JG39-40013A	
	Wire Harness, OPE-Scan		JG39-40017A	
	Wire Harness, Speaker, 2 P		JG39-40006A	
	Wire Harness, Main-Scan		JG39-40018A	
	Wire Harness, Drive Ground Harness		JG39-40014A	
	Wire Harness, MJ-LIU		JG39-40132A	
	Wire Harness, Base-Main Farme		JG39-40011A	
	Wire Harness, Brush-Scan Gnd		JG39-40010A	
	Wire Harness, Main-SMPS		JG39-40016A	
	Wire Harness, Main-LIU, Flat, 20 P		JF39-40915A	
	Wire Harness, Main-PRT		JG39-40019A	
	Wire Harness, SMPS-Printer		JG39-40009A	
	Motor, Step, 24 V		3101-001002	
	Interrupter, TR (Scan Sensor)		895-610012AA	
	Switch, Micro, Level, Cover		3405-000166	
	Curl Cord		JF39-60001A	
	Audio, Speaker, 0.5 W, 8 ohm		3001-000214	
	Cable, 9 P, RS232C, 1.8 M		JF39-40905A	
	Power Supply Unit		JG44-10002A	
	Lever Switch Ass'y		JG96-00045A	

10-7 PRINTER PBA

	No	Description	Part Name	SEC Code	Remark
		- Capacitors -			
	C1	Chip, 100 nF, Z, 50 V		915-416100HZAH	
	C2	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C3	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C4	Chip, 561J,1H:560PF		915-433560HJXHNC	
	C5	Electrollytic, 1000UF/50V		917-864100FMAH	
	C7	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C8	Chip, 220J,1H:22PF		915-412220HJXH	
	C10	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C11	Chip, 561J,1H:560PF		915-433560HJXHNC	
	C12	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C15	Chip, 101J,1H:100PF		915-413100HJXH	
	C16	Chip, 220J,1H:22PF		915-412220HJXH	
	C17	Chip, 220J,1H:22PF		915-412220HJXH	
	C18	Chip, 102J,1H:1NF		915-414100HJXH	
	C19	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C21	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C23	Chip, 221J,1H:220PF		915-413220HJXH	
	C28	Chip, 102J,1H:1NF		915-414100HJXH	
	C29	Chip, 102J,1H:1NF		915-414100HJXH	
	C30	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C31	Chip, 102J,1H:1NF		915-414100HJXH	
	C32	Chip, 102J,1H:1NF		915-414100HJXH	
	C33	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C34	Chip, 561J,1H:560PF		915-433560HJXHNC	
	C35	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C36	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C37	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C38	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C39	Chip, 102J,1H:1NF		915-414100HJXH	
	C40	Chip, 102J,1H:1NF		915-414100HJXH	
	C41	Chip, 220J,1H:22PF		915-412220HJXH	
	C42	Chip, 102J,1H:1NF		915-414100HJXH	
	C42	Chip, 102J,1H:1NF		915-414100HJXH	
	C43	Chip, 102J,1H:1NF		915-414100HJXH	
	C44	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C45	Chip, 220J,1H:22PF		915-412220HJXH	
	C46	Chip, 220J,1H:22PF		915-412220HJXH	
	C47	Chip, 102J,1H:1NF		915-414100HJXH	
	C48	Chip, 220J,1H:22PF		915-412220HJXH	

	No	Description	Part Name	SEC Code	Remark
	C49	Chip, 100PF,20%,50V	CL21C101JBNC	915-413100HJXH	
	C50	Chip, 102J,1H:1NF		915-414100HJXH	
	C51	Chip, 221J,1H:220PF		915-413220HJXH	
	C52	Electrollytic, 100UF/25V		917-743100EM	
	C53	Chip, 561J,1H:560PF		915-433560HJXHNC	
	C54	Chip, 821J,1H:820PF		2203-000009	
	C55	Chip, 821J,1H:820PF		2203-000009	
	C56	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C57	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C58	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C59	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C60	Chip, 101J,1H:100PF	CL21C101JBNC	915-413100HJXH	
	C61	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C62	Chip, 220J,1H:22PF		915-412220HJXH	
	C63	Chip, 221J,1H:220PF		915-413220HJXH	
	C64	Chip, 220J,1H:22PF		915-412220HJXH	
	C65	Chip, 101J,1H:100PF	CL21C101JBNC	915-413100HJXH	
	C66	Chip, 220J,1H:22PF		915-412220HJXH	
	C67	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C68	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C69	Chip, 220J,1H:22PF		915-412220HJXH	
	C70	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C71	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C72	Chip, 101J,1H:100PF	CL21C101JBNC	915-413100HJXH	
	C73	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C74	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C75	Chip, 102J,1H:1NF		915-414100HJXH	
	C76	Chip, 821J,1H:820PF		2203-000009	
	C77	Chip, 821J,1H:820PF		2203-000009	
	C78	Chip, 220J,1H:22PF		915-412220HJXH	
	C79	Chip, 101J,1H:100PF	CL21C101JBNC	915-413100HJXH	
	C80	Chip, 101J,1H:100PF	CL21C101JBNC	915-413100HJXH	
	C81	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C82	Chip, 220J,1H:22PF		915-412220HJXH	
	C83	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C85	Chip, 101J,1H:100PF	CL21C101JBNC	915-413100HJXH	
	C86	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C200	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C201	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C202	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C203	Chip, 104Z,1H:0.1U		915-416100HZAH	
	C204	Chip, 104Z,1H:0.1U		915-416100HZAH	

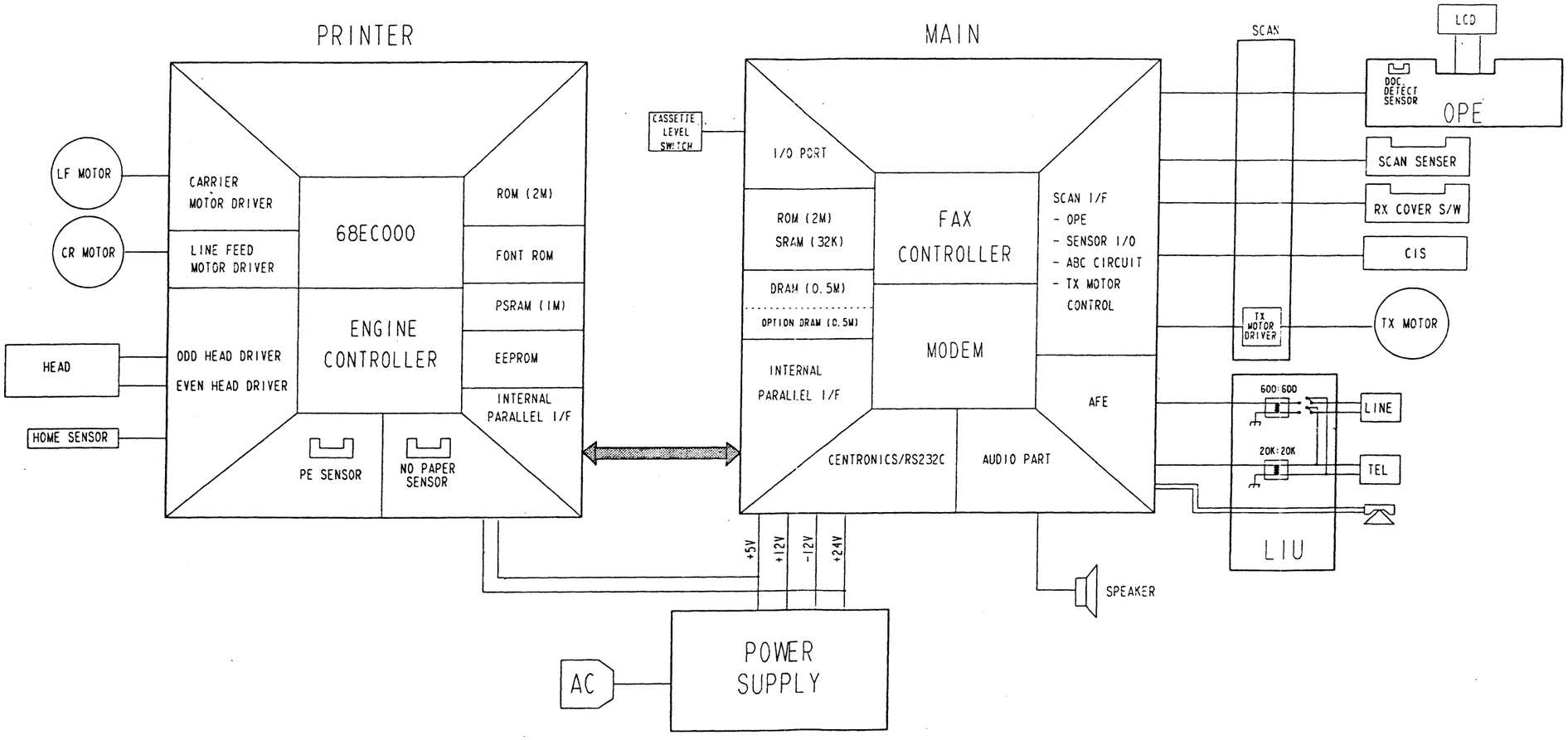
	No	Description	Part Name	SEC Code	Remark
		- Connectors -			
	CN1	FPC,30P,1MM	SLW30S-1C7	3708-000003	
	CN2	FPC,30P,1MM	SLW30S-1C7	3708-000003	
	CN4	WALL HEADER,4P,2.5MM	GILS-4P-S2T2-EF	935-240904DW	
	CN5	WALL HEADER,3P,2.5MM	GILS-3P-S2T2-EF	935-240903DW	
	CN6	WALL HEADER,6P,2.5MM	GILS-6P-S2T2-EF	935-240906DW	
	CN7	WALL HEADER,5P,2.5MM	GILS-5P-S2T2-EF	935-240905DW	
	CN8	BOX HEADER,28P,2R,STRAIGHT	DF11-28DP-2DSA		
		- Diodes -			
	D1	REC,DAP202CL,SOT-23	DAP202CL	893-190202AA	
	D2	REC,DAP202CL,SOT-23	DAP202CL	893-190202AA	
	D3	SCH,301L	MMBD301L	893-190301AB	
	D4	REC,1N4002	1N4002	893-314002AANE	
	ZD1	ZENER,Z5249BL	MMBZ5249BL	893-295249AA	
	ZD2	ZENER, 5234BL	MMBZ5234BL	893-295234AA	
		- IC's -			
	U1	TTL,74LS245,TRANSCEIVER	74LS245	871-760245GANC	
	U2	DRIVE	A5817SEP	881-605817AA	
	U4	TTL,BUFFER,SOP,14,150MIL	DM7406N	871-700006XA	
	U5	LIN,COMP,LM339	KA339D	881 200339XA	
	U6	MEM,PSRAM,SOP	KM658128ALG-8	1106-000001	
	U7	MEM,EPROM,27C040	27C040	883-627040BB	
	U8	TR-ARRAY	STA471A	881-804102YA	
	U9	MOS,D F/F	74HCT273	0801-000016	
	U10	MOS,BUFFER	74LS244	871-760244GA	
	U11	MEM,MASK ROM,23C16000	23C16000	883 899027GA	
	U12	DRIVE	A5817SEP	881-605817AA	
	U13	MOS,INVERTER,SOP,14,150MIL	74HC14	0801-000012	
	U14	MPU,PROCESSOR,PLCC,68,16BIT	MC68EC000FU10	0902-000001	
	U15	CUS,ASIC,100PFIN,QFP	MERCURY	JB13-10001A	
	U16	DRIVE	PBL3717A	881-903717AA	
	U17	DRIVE	PBL3717A	881-903717AA	
	U18	MEM,EEPROM,SOP	ST24C02AM1	883-602402GA	
		- Resistors -			
	R1	FUSABLE,22.1,1%,1/2W		911-822215FA	
	R2	FUSABLE,22.1,1%,1/2W		911-822215FA	
	R3	FUSABLE,22.1,1%,1/2W		911-822215FA	
	R4	FUSABLE,22.1,1%,1/2W		911-822215FA	
	R5	Chip, 5.1K,1%,1/10W	RC2012J512CS	911-745107BS	
	R6	Chip, 5.1K,1%,1/10W	RC2012J512CS	911-745107BS	
	R7	Chip, 300K,5%,1/10W		2007-000027	
	R8	Chip, 5.1K,1%,1/10W	RC2012J512CS	911-745107BS	

	No	Description	Part Name	SEC Code	Remark
	R9	Chip, 10 kohm, 5 %, 1/10W	RC2012J103CS	911-751007BS	
	R10	Chip, 16.9K,1%,1/10W		2007-000025	
	R11	Chip, 10 kohm, 1%,0.1W,0805		911-751005BS	
	R12	Chip, 200 ohm, 5 %, 1/10W	RC3216J201CS	911-732007CR	
	R13	Chip, 39.2K,1%,1/10W		911-753925BS	
	R17	Chip, 1.62K,1%,1/10W		911-741625BS	
	R18	Chip, 16.9K,1%,1/10W		2007-000025	
	R22	Chip, 1 kohm, 5 %, 1/10W	RC2012J102CS	911-741007BS	
	R23	Chip, 1 kohm, 5 %, 1/10W	RC2012J102CS	911-741007BS	
	R26	Chip, 3.6K,5%,1/10W	RC2012J362CS	911-743607BS	
	R27	Chip, 10 kohm, 5 %, 1/10W	RC2012J103CS	911-751007BS	
	R28	Chip, 1 kohm, 5 %, 1/10W	RC2012J102CS	911-741007BS	
	R29	Chip, 1 kohm, 5 %, 1/10W	RC2012J102CS	911-741007BS	
	R30	Chip, 1.3K,5%,1/10W		2007-000024	
	R31	Chip, 1 kohm, 5 %, 1/10W	RC2012J102CS	911-741007BS	
	R32	Chip, 0,1/8W	RC2012J000CS	911-710007BS	
	R49	Chip, 39,5%,1/10W		2007-000028	
	R50	Chip, 39,5%,1/10W		2007-000028	
	R51	Chip, 39,5%,1/10W		2007-000028	
	R52	Chip, 39,5%,1/10W		2007-000028	
	R53	Chip, 39,5%,1/10W		2007-000028	
	R54	Chip, 39,5%,1/10W		2007-000028	
	R55	Chip, 39,5%,1/10W		2007-000028	
	R56	Chip, 39,5%,1/10W		2007-000028	
	R57	Chip, 100,5%,1/10W	RC2012J101CS	911-731007BS	
	R58	Chip, 100,5%,1/10W	RC2012J101CS	911-731007BS	
	R59	Chip, 100,5%,1/10W	RC2012J101CS	911-731007BS	
	R60	Chip, 120,5%,1/10W		2007-000023	
	R61	Chip, 100,5%,1/10W	RC2012J101CS	911-731007BS	
	R62	Chip, 1 kohm, 5 %, 1/10W	RC2012J102CS	911-741007BS	
	R63	Chip, 1 kohm, 5 %, 1/10W	RC2012J102CS	911-741007BS	
	R64	Chip, 1 kohm, 5 %, 1/10W	RC2012J102CS	911-741007BS	
	R65	Chip, 1 kohm, 5 %, 1/10W	RC2012J102CS	911-741007BS	
	R66	Chip, 1 kohm, 5 %, 1/10W	RC2012J102CS	911-741007BS	
	R67	Chip, 3.6K,5%,0.1W,0805	RC2012J362CS	911-743607BS	
	R68	Chip, 750,5%,1/10W	RC2012J751CS	911-737507BS	
	R69	Chip, 750,5%,1/10W	RC2012J751CS	911-737507BS	
	R70	Chip, 100,5%,1/10W	RC2012J101CS	911-731007BS	
	R71	Chip, 100,5%,1/10W	RC2012J101CS	911-731007BS	
	R72	Chip, 100,5%,1/10W	RC2012J101CS	911-731007BS	
	R73	Chip, 750,5%,1/10W	RC2012J751CS	911-737507BS	
	R74	Chip, 5.1K,1%,1/10W	RC2012J512CS	911-745107BS	

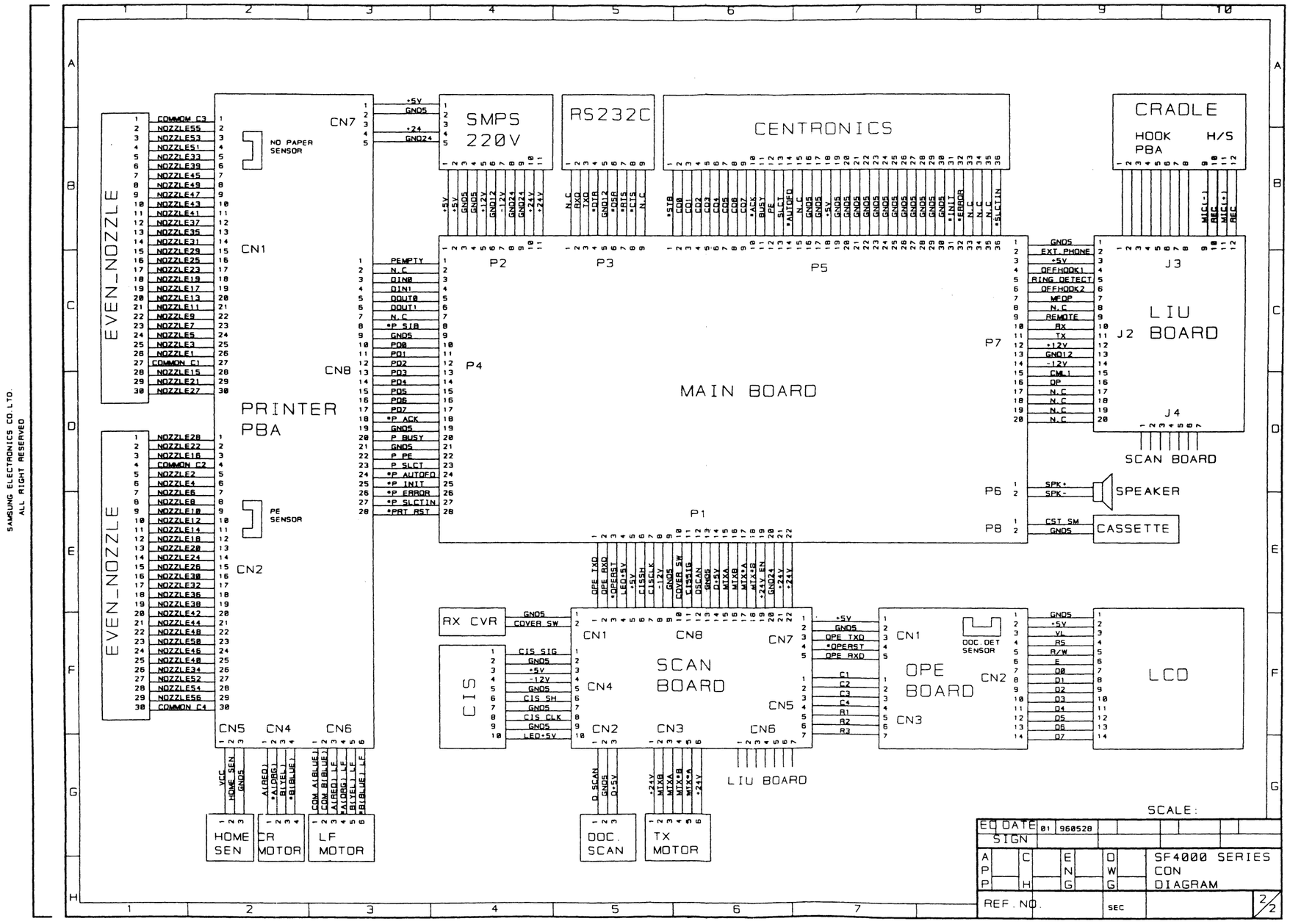
	No	Description	Part Name	SEC Code	Remark
	R75	Chip, 100,5%,1/10W	RC2012J101CS	911-731007BS	
	R76	Chip, 120,5%,1/10W		2007-000023	
	R77	Chip, 100,5%,1/10W	RC2012J101CS	911-731007BS	
	R78	Chip, 5.1K,1%,1/10W	RC2012J512CS	911-745107BS	
	R79	Chip, 5.1K,1%,1/10W	RC2012J512CS	911-745107BS	
	R80	Chip, 120,5%,1/10W		2007-000023	
	R81	Chip, 120,5%,1/10W		2007-000023	
	R82	Chip, 5.1K,1%,1/10W	RC2012J512CS	911-745107BS	
	R83	Chip, 120,5%,1/10W		2007-000023	
	R84	Chip, 120,5%,1/10W		2007-000023	
	R85	Chip, 200 ohm, 5 %, 1/10W		911-732007BS	
	R86	Carbon, 0.5,1/2W	CR1/2W,0.5,J	911-105007FA	
	R87	Chip, 5.1K,1%,1/10W	RC2012J512CS	911-745107BS	
	R88	Carbon, 0.5,1/2W	CR1/2W,0.5,J	911-105007FA	
	R89	Chip, 200 ohm, 5 %, 1/10W	RC3216J201CS	911-732007CR	
	R90	Chip, 10 kohm, 5 %, 1/10W	RC2012J103CS	911-751007BS	
	R93	Chip, 1 kohm, 5 %, 1/10W	RC2012J102CS	911-741007BS	
	R94	Chip, 1 kohm, 5 %, 1/10W	RC2012J102CS	911-741007BS	
	R95	Chip, 5.1K,1%,1/10W	RC2012J512CS	911-745107BS	
	R100	Chip, 10 kohm, 5 %, 1/10W	RC2012J103CS	911-751007BS	
	R101	Chip, 15K,5%,1/10W	RC2012J153CS	911-751507BS	
	R102	Chip, 10 kohm, 5 %, 1/10W	RC2012J103CS	911-751007BS	
	R103	Chip, 1.21K,1%,0.1W,0805		911-741215BS	
	R104	Chip, 5.1K,1%,1/10W	RC2012J512CS	911-745107BS	
	R105	Chip, 750,5%,1/10W	RC2012J751CS	911-737507BS	
	R106	Chip, 100,5%,1/10W	RC2012J101CS	911-731007BS	
	R107	Chip, 1.5K,5%,1/10W	RC2012J152CS	911-741507BS	
	R108	Chip, 100,5%,1/10W	RC2012J101CS	911-731007BS	
	R109	Chip, 5.1K,1%,1/10W	RC2012J512CS	911-745107BS	
	R110	Chip, 750,5%,1/10W	RC2012J751CS	911-737507BS	
	R111	Chip, 200 ohm, 5 %, 1/10W		911-732007BS	
	R112	Chip, 5.1K,1%,1/10W	RC2012J512CS	911-745107BS	
	R113	Chip, 100,5%,1/10W	RC2012J101CS	911-731007BS	
	R114	Chip, 100,5%,1/10W	RC2012J101CS	911-731007BS	
	R115	Chip, 100,5%,1/10W	RC2012J101CS	911-731007BS	
	R116	Chip, 100,5%,1/10W	RC2012J101CS	911-731007BS	
	R117	Chip, 1M,5%,1/10W	RC2012J105CS	911-771007BS	
	R118	Chip, 5.1 kohm, 1%,1/10W	RC2012J512CS	911-745107BS	
	R119	Chip, 5.1 kohm, 1%,1/10W	RC2012J512CS	911-745107BS	
	R120	Chip, 200 ohm, 5 %, 1/10W		911-732007BS	
	R121	Chip, 56K,5%,1/10W	RC2012J563CS	911-755607BS	
	R122	Chip, 56K,5%,1/10W	RC2012J563CS	911-755607BS	

	No	Description	Part Name	SEC Code	Remark
	R123	Chip, 100,5%,1/10W	RC2012J101CS	911-731007BS	
	R124	Chip, 100,5%,1/10W	RC2012J101CS	911-731007BS	
	R125	Chip, 100,5%,1/10W	RC2012J101CS	911-731007BS	
	R126	Chip, 100,5%,1/10W	RC2012J101CS	911-731007BS	
	R127	Chip, 100,5%,1/10W	RC2012J101CS	911-731007BS	
	R128	Chip, 100,5%,1/10W	RC2012J101CS	911-731007BS	
	R129	Chip, 100,5%,1/10W	RC2012J101CS	911-731007BS	
	R130	Chip, 5.11 kohm, 1%,1/10W	RC2012F5111CS	911-745115BS	
	R131	Chip, 5.1K,1%,1/10W	RC2012J512CS	911-745107BS	
	R132	Chip, 120,5%,1/10W		2007-000023	
	R133	Chip, 750,5%,1/10W	RC2012J751CS	911-737507BS	
	R134	Chip, 15K,5%,1/10W	RC2012J153CS	911-751507BS	
	R136	Chip, 0, 1/8W 0805	RC2012J000CS	911-710007BS	
	R137	Chip, 200 ohm, 5 %, 1/10W		911-732007BS	
	R138	Chip, 10 kohm, 5 %, 1/10W	RC2012J103CS	911-751007BS	
	R139	Chip, 750,5%,1/10W	RC2012J751CS	911-737507BS	
	R140	Chip, 0, 1/8W	RC2012J000CS	911-710007BS	
	R141	Chip, 0, 1/8W	RC2012J000CS	911-710007BS	
	R142	Chip, 0, 1/8W	RC2012J000CS	911-710007BS	
	R143	Chip, 0, 1/8W	RC2012J000CS	911-710007BS	
	R144	Chip, 4.7 kohm, 5 %, 1/10W	RC2012J472CS	911 744707BS	
	R145	Chip, 0, 1/8W	RC2012J000CS	911-710007BS	
	R146	Chip, 4.7 kohm, 5 %, 1/10W	RC2012J472CS	911 744707BS	
		- Transistors -			
	Q1	FET-P,IRFR9024	IRFR9024	891-799024AA	
	Q2	TR-NPN,MMBT2222A,SOT-23	KST2222A	891-392222AB	
	Q3	TR-NPN,MMBT2222A,SOT-23	KST2222A	891-392222AB	
	Q4	TR-PNP,TIP127	TIP127	891-590127AANB	
	Q7	TR-NPN,MMBT2222A,SOT-23	KST2222A	891-392222AB	
		- Micellanceous -			
	RN1	R-NET,9P,1.0K		887-135102SG	
	L1	COIL-FILTER,60MH,12UH		JB27-20001A	
	L2	COIL-FILTER,60MH,12UH		JB27-20001A	
	PH1	PHOTO-INT,SG-206	SG206	895-610020AA	
	PH2	PHOTO-INT,SG-206	SG206	895-610020AA	
	PCB				
	X1	RESONATOR,20MHZ		941-210032AA	
	BD1	MAG-CORE,FERRITE BEAD	EFCB3225137S	937-120210AA	
	BD2	MAG-CORE,FERRITE BEAD	EFCB3225137S	937-120210AA	
	BD3	MAG-CORE,FERRITE BEAD	EFCB3225137S	937-120210AA	
	BD4	MAG-CORE,FERRITE BEAD	EFCB3225137S	937-120210AA	

11. Block Diagram

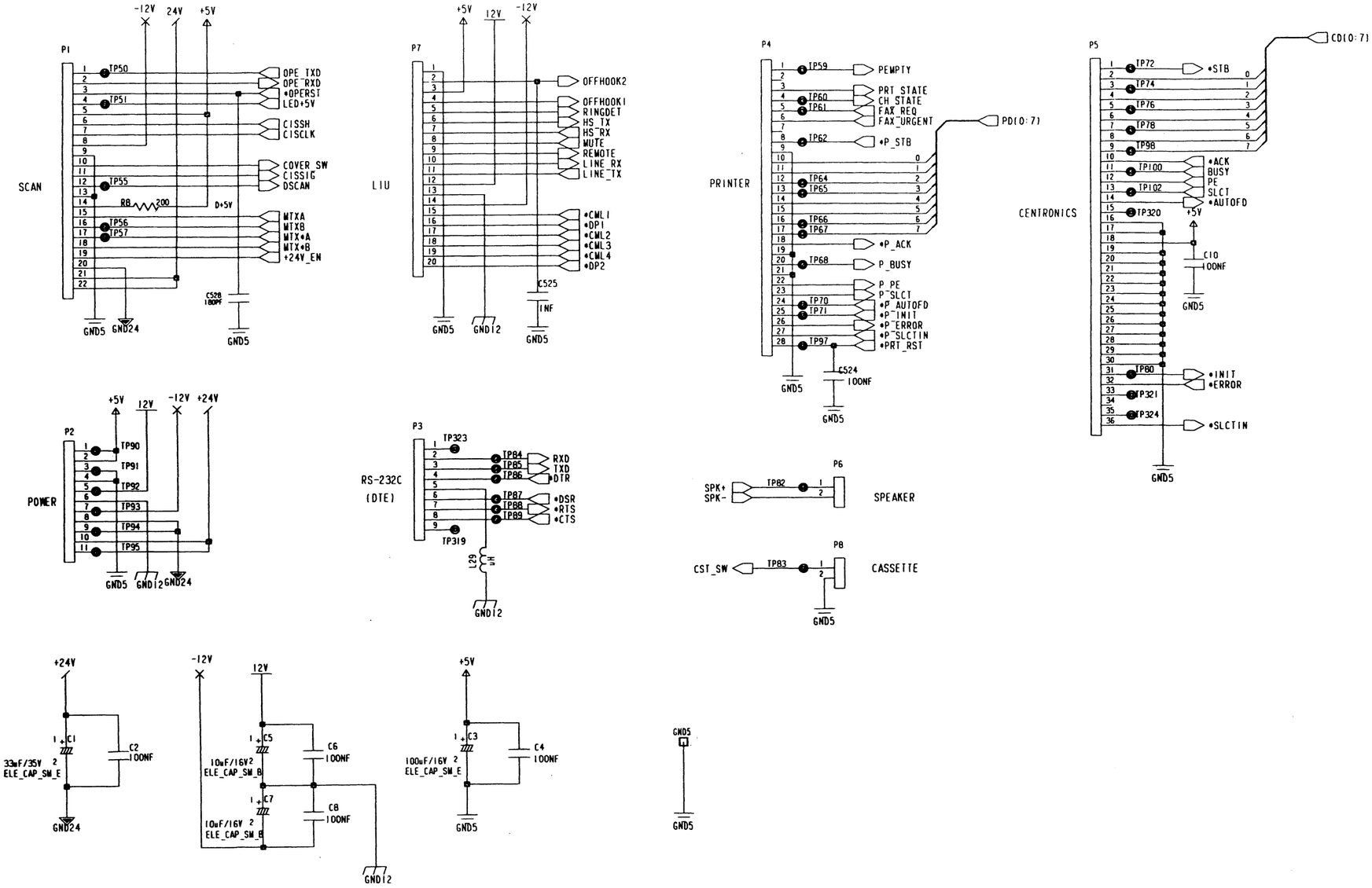


12. Wiring Diagram

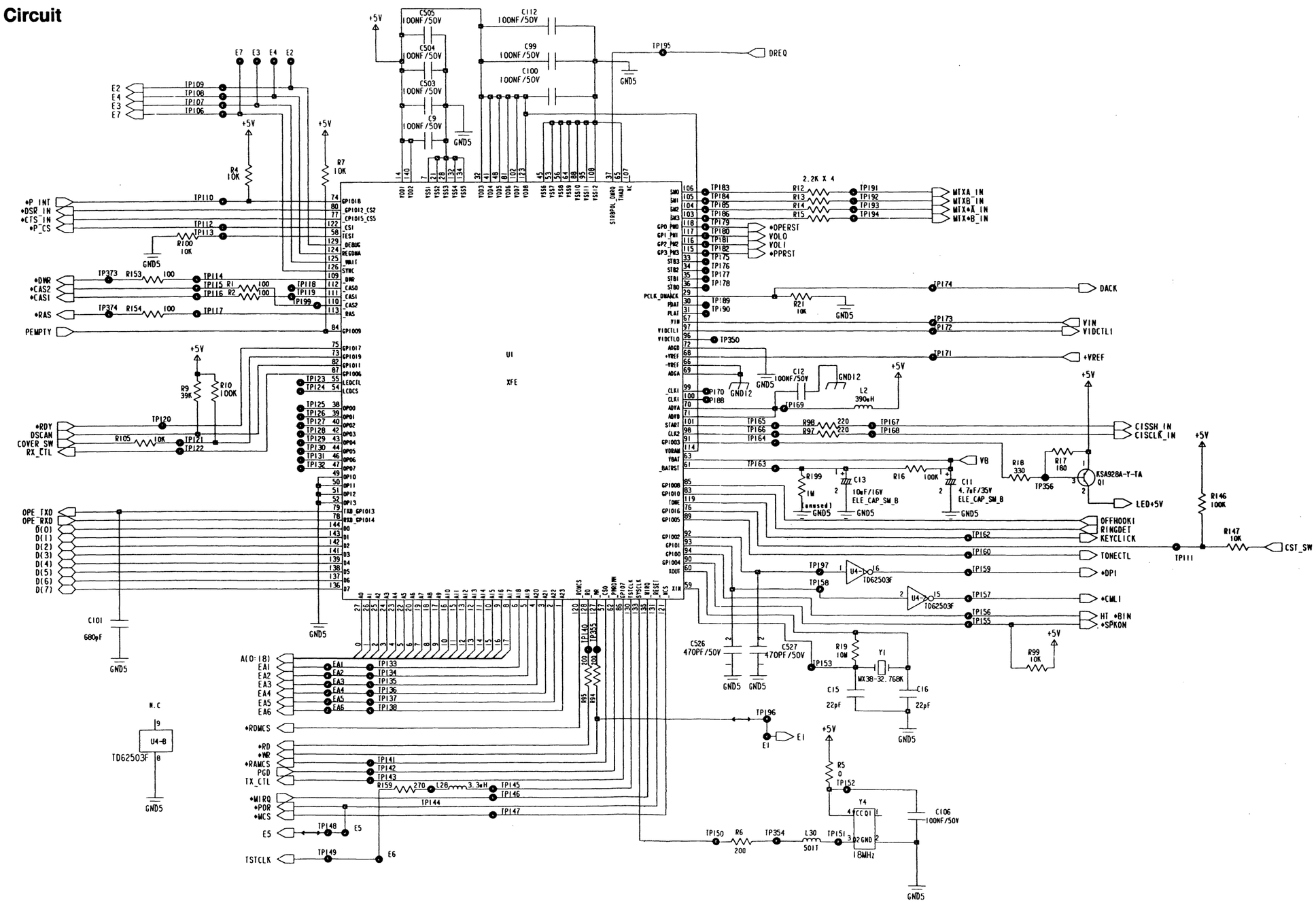


13. Schematic Diagrams

13-1 Main Circuit Diagrams



Main Circuit



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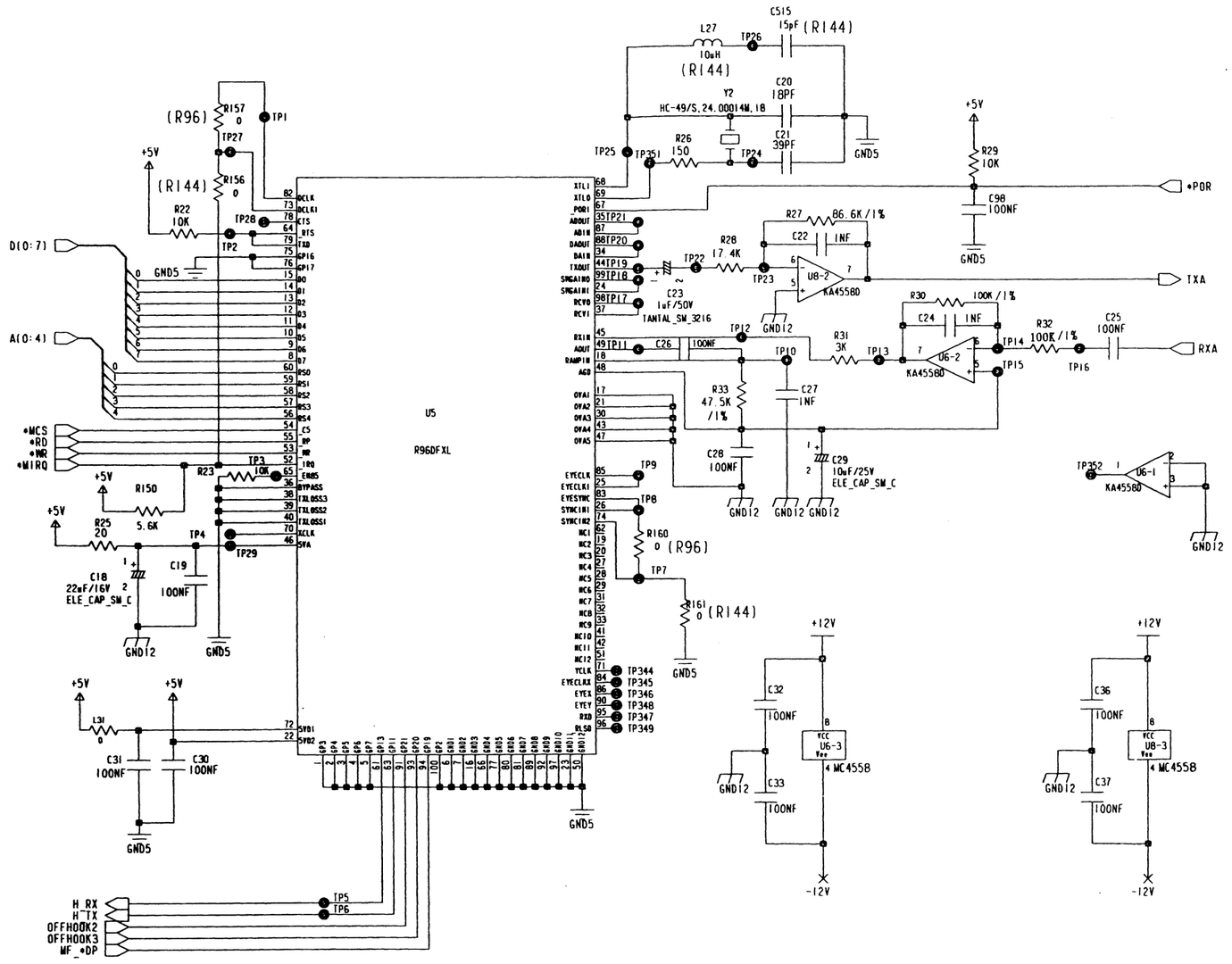

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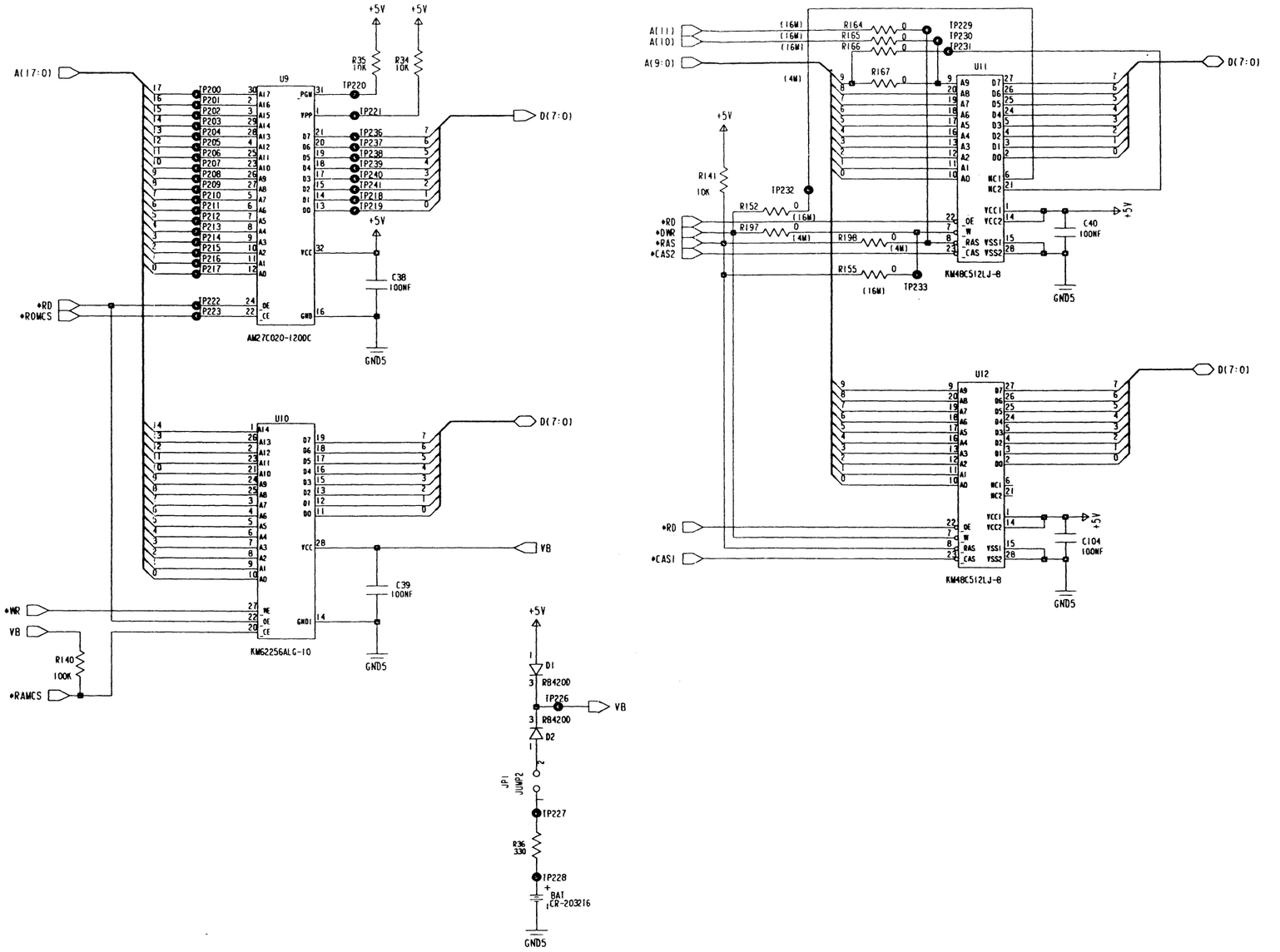

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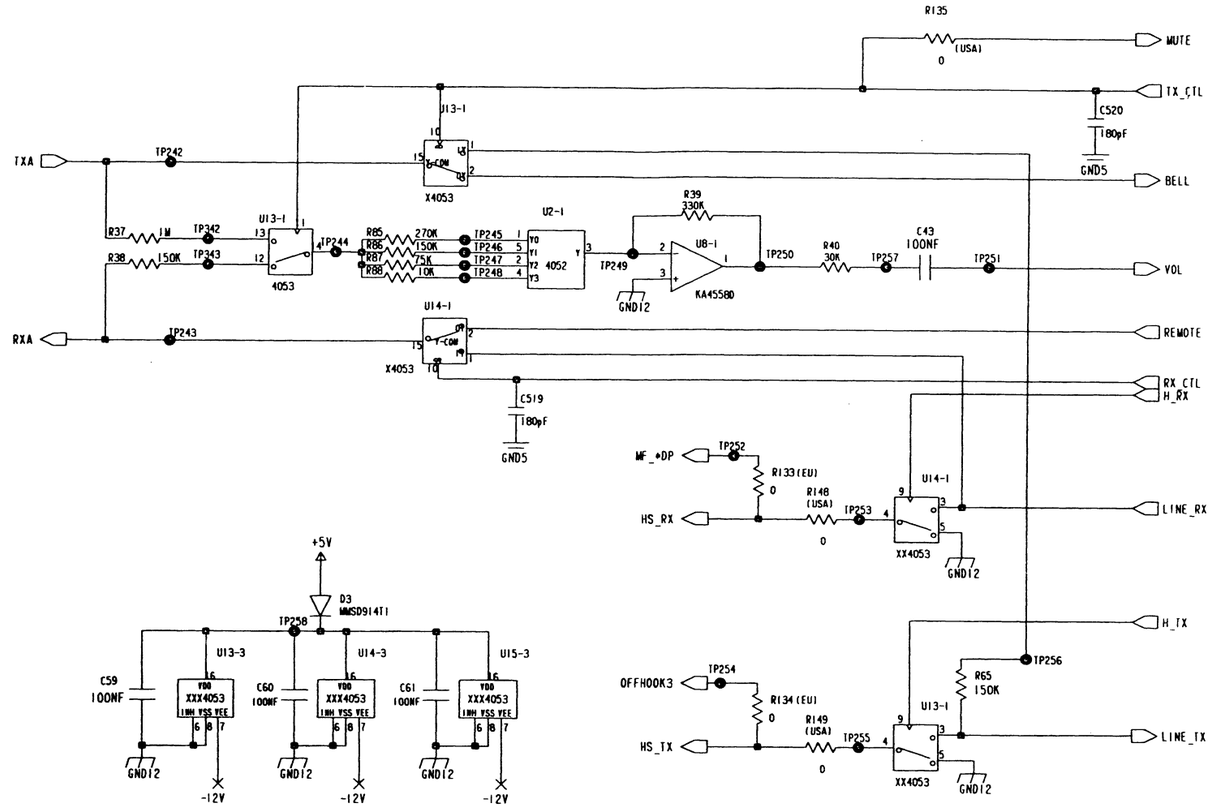

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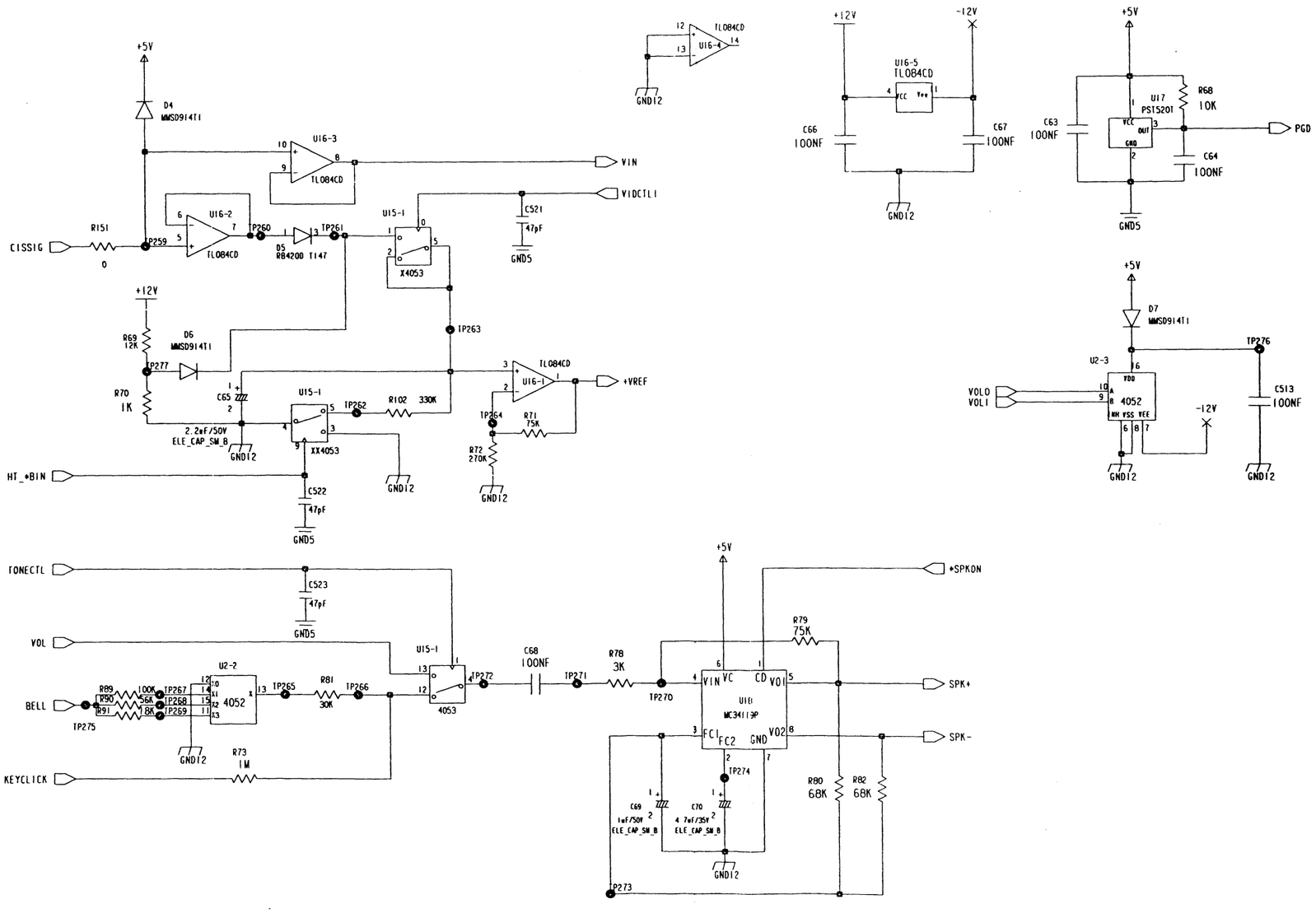

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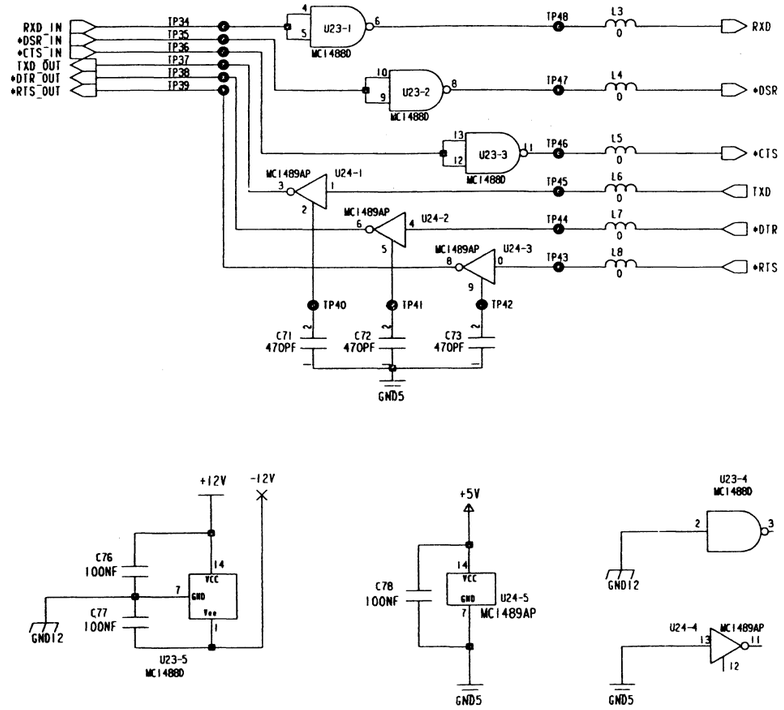

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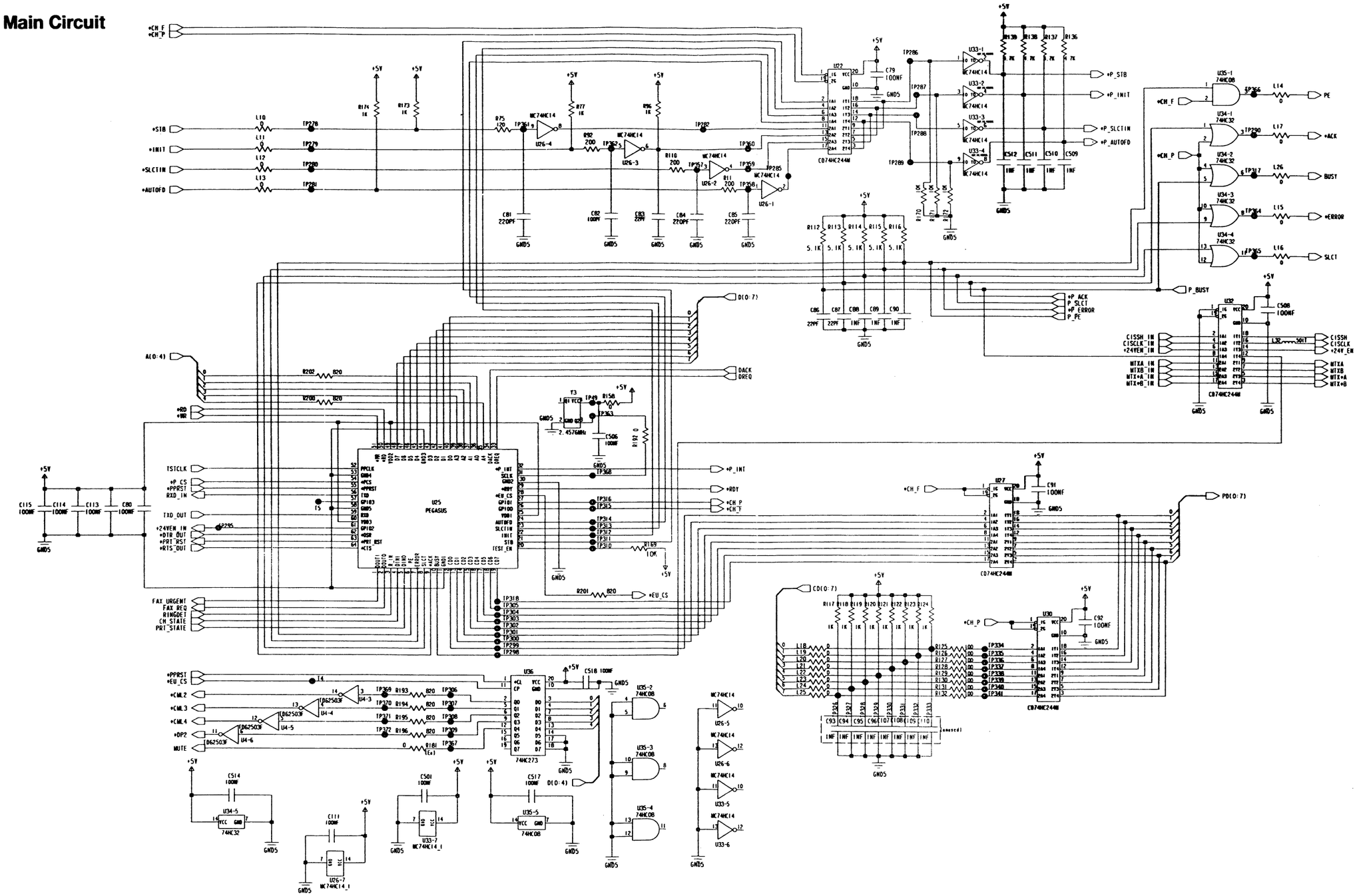
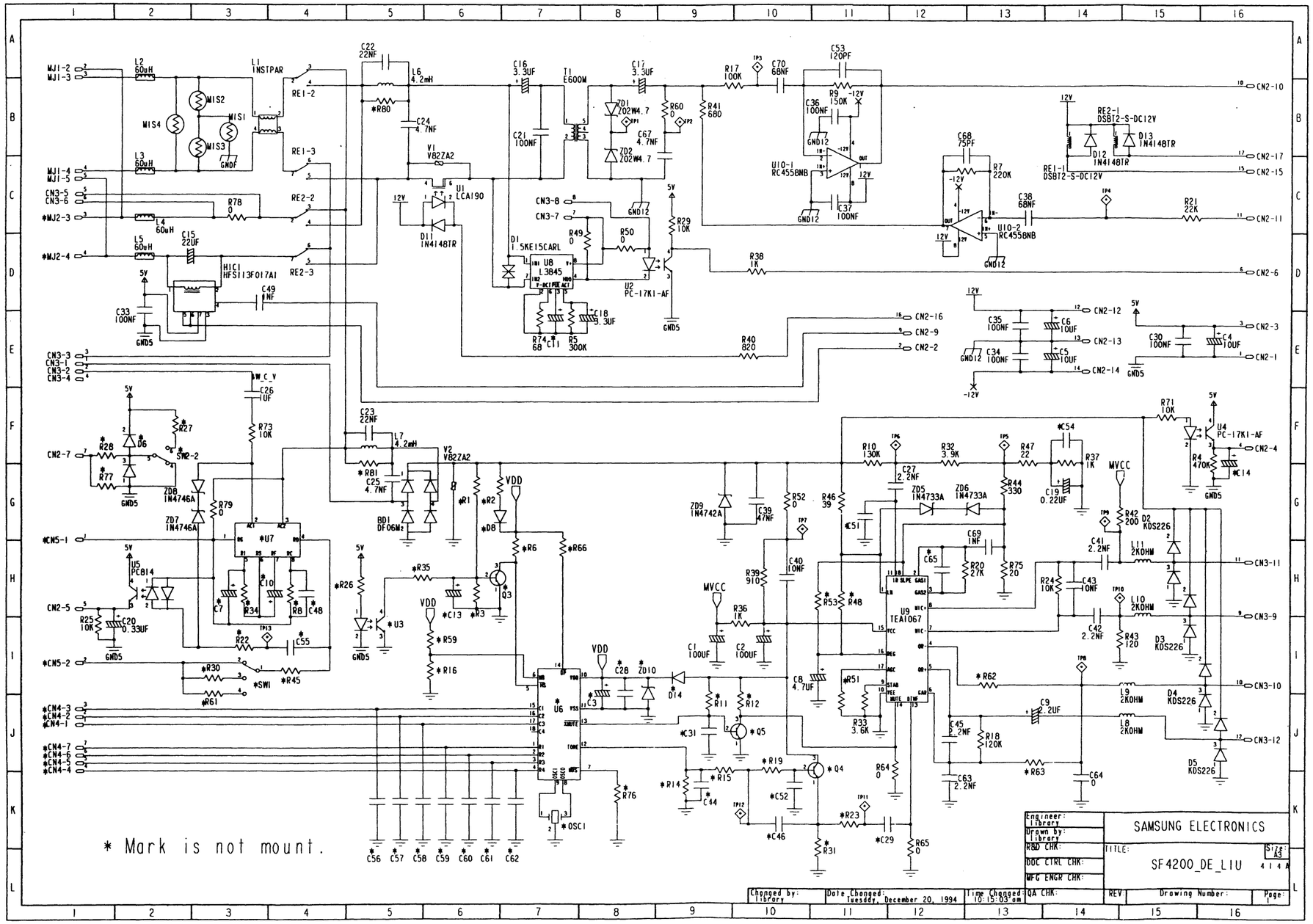
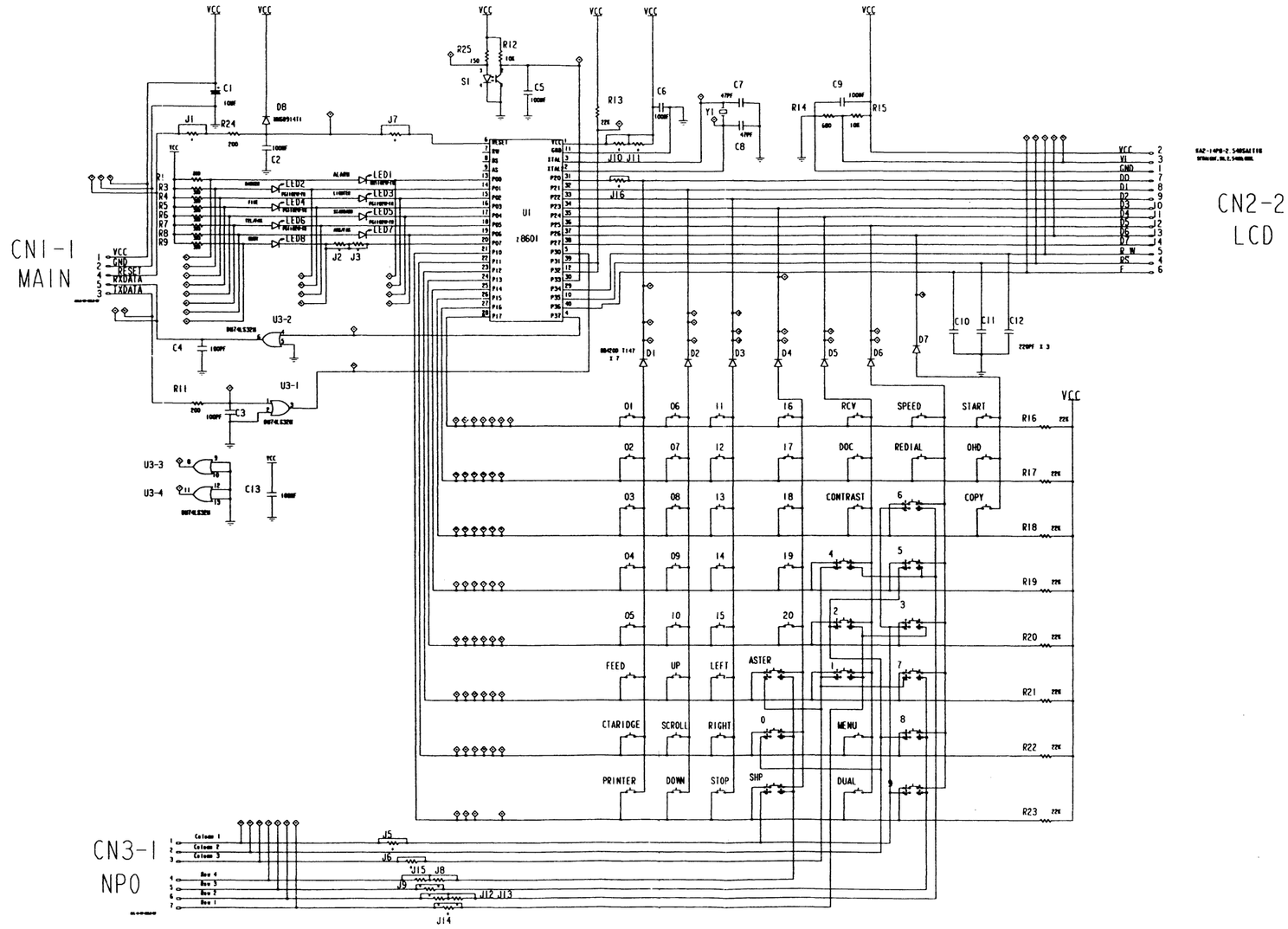


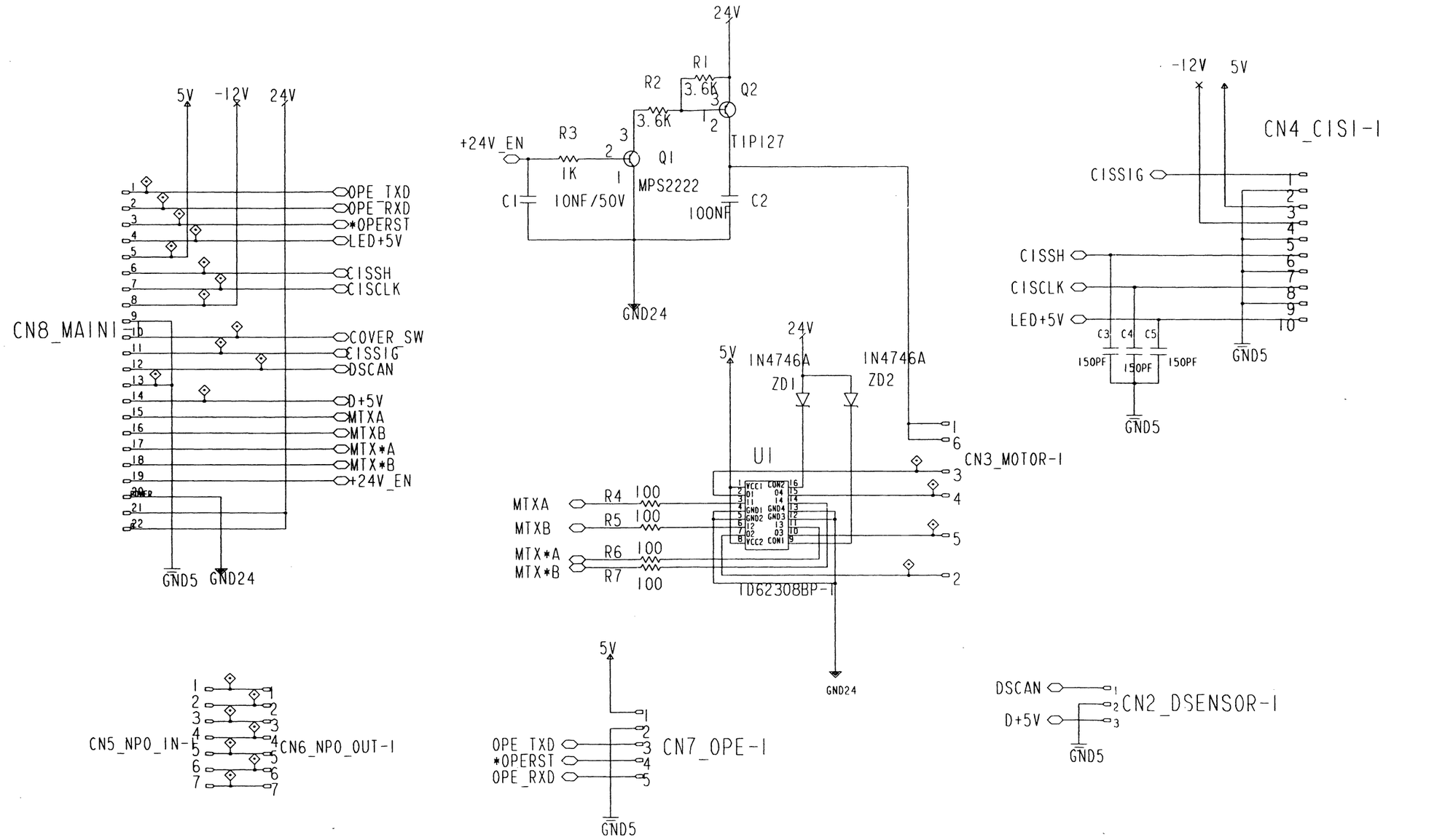
13-2 LIU Circuit Diagram



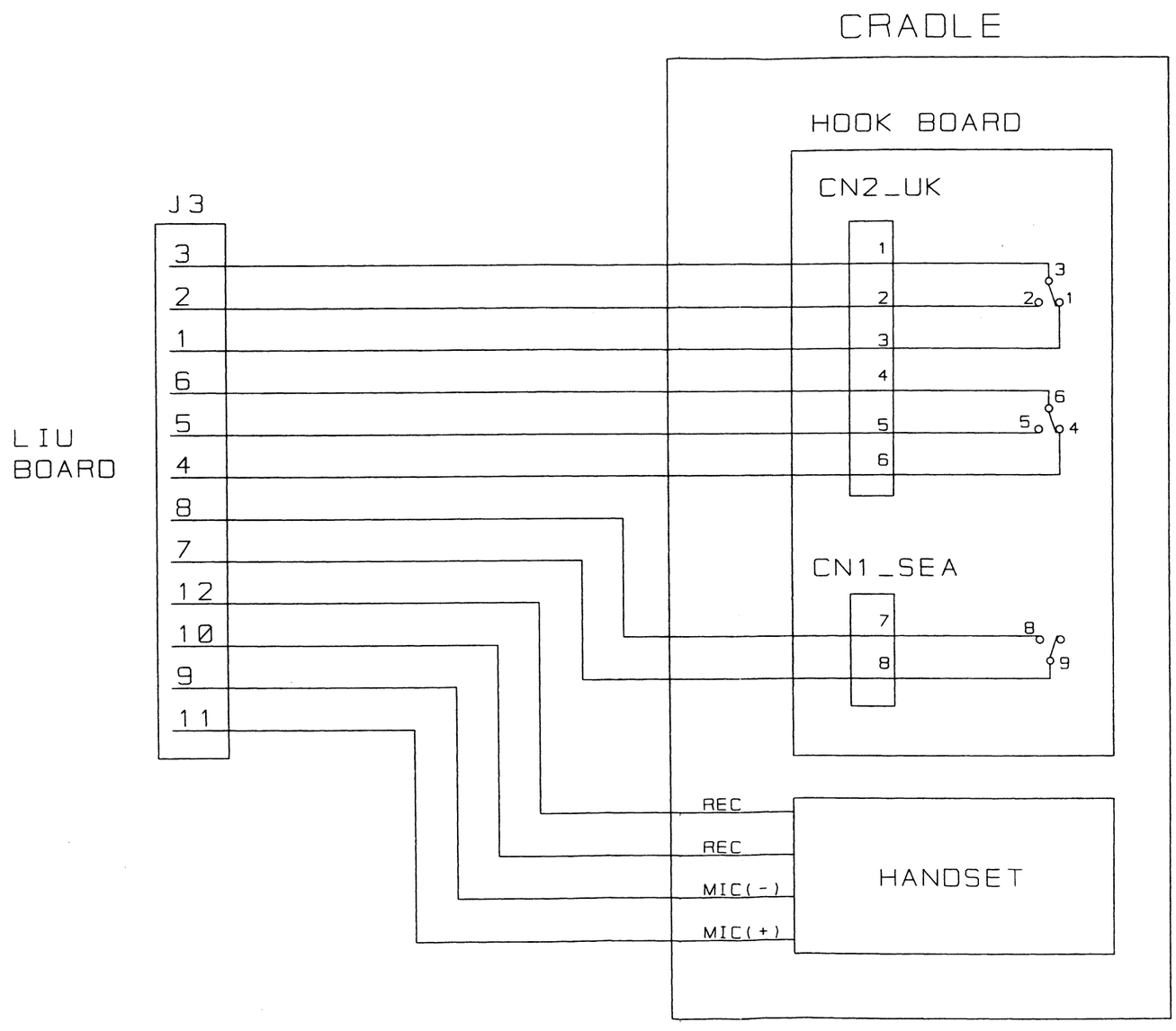
13-3 OPE Circuit Diagram



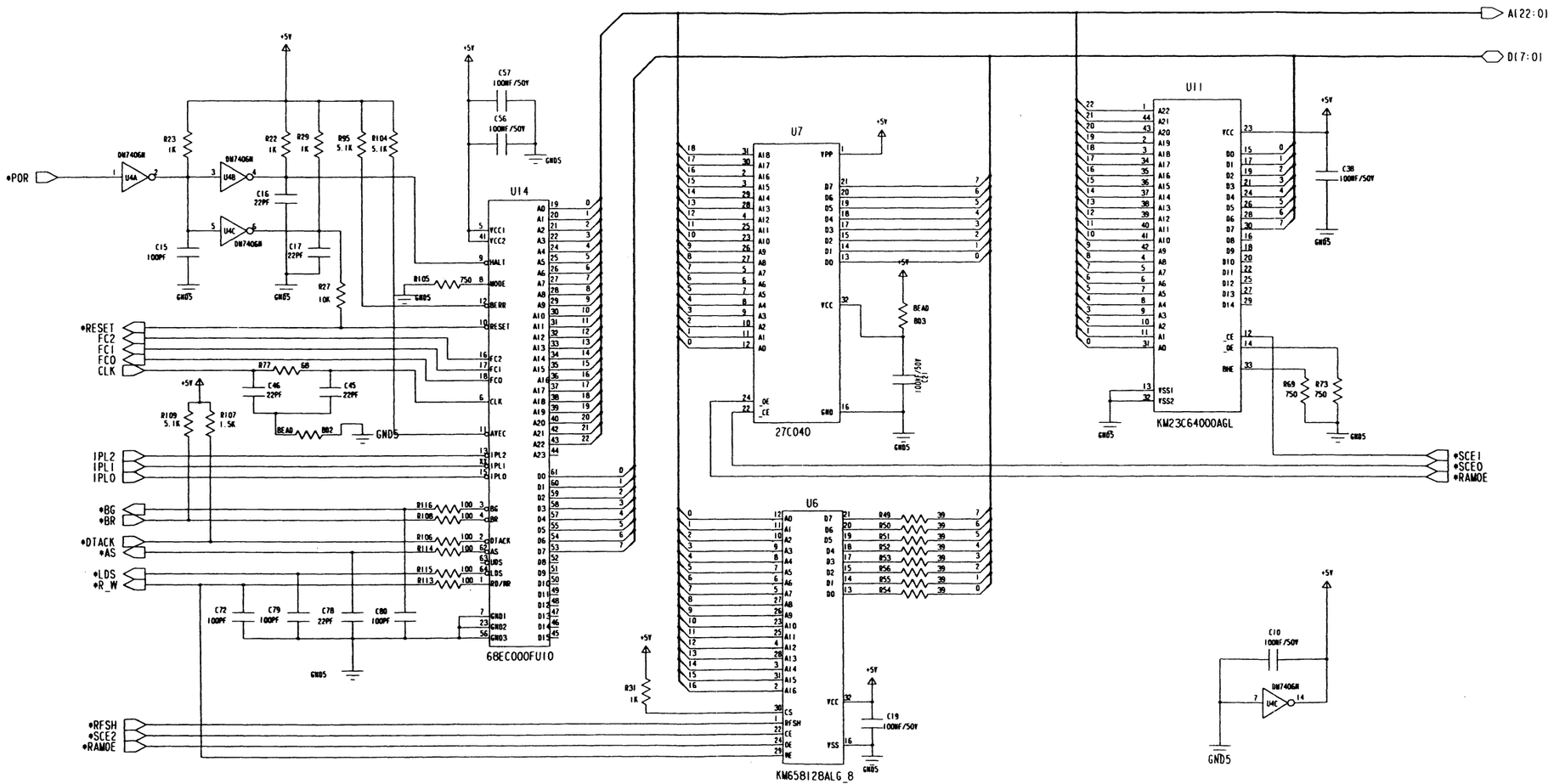
13-4 Scan Circuit Diagram



13-5 Hook Circuit Diagram



13-6 Printer Circuit Diagram



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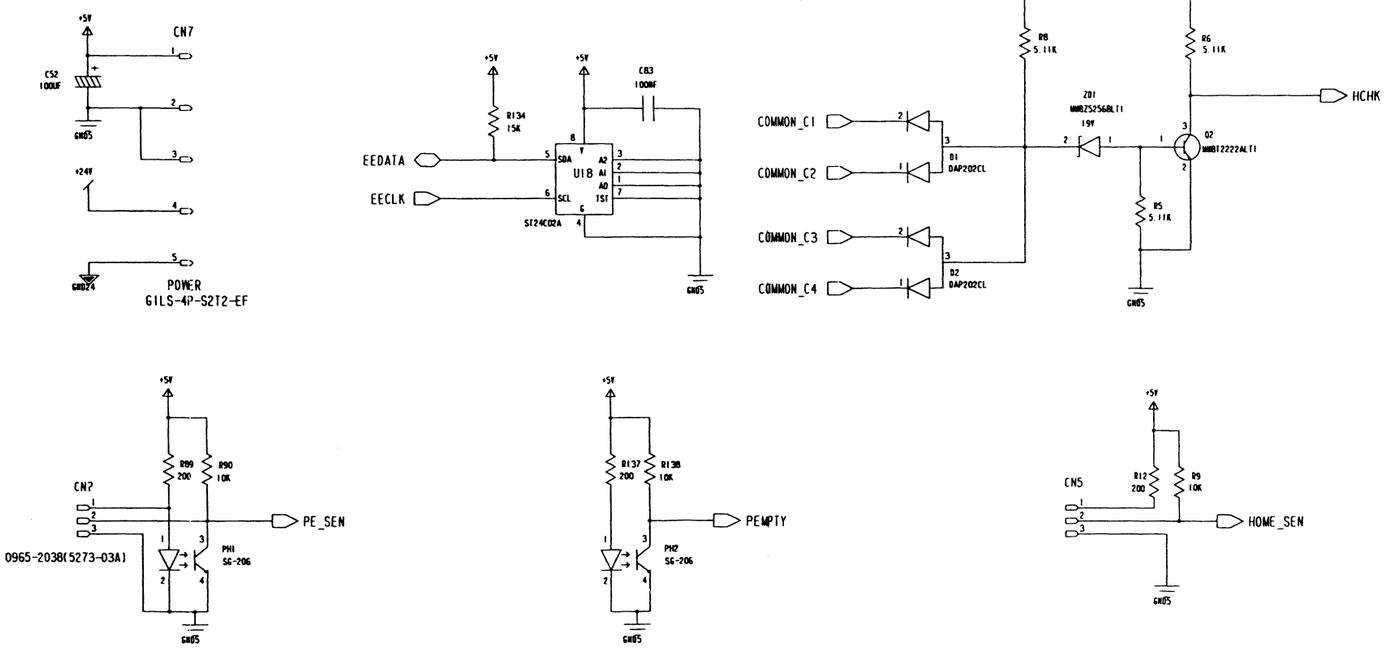

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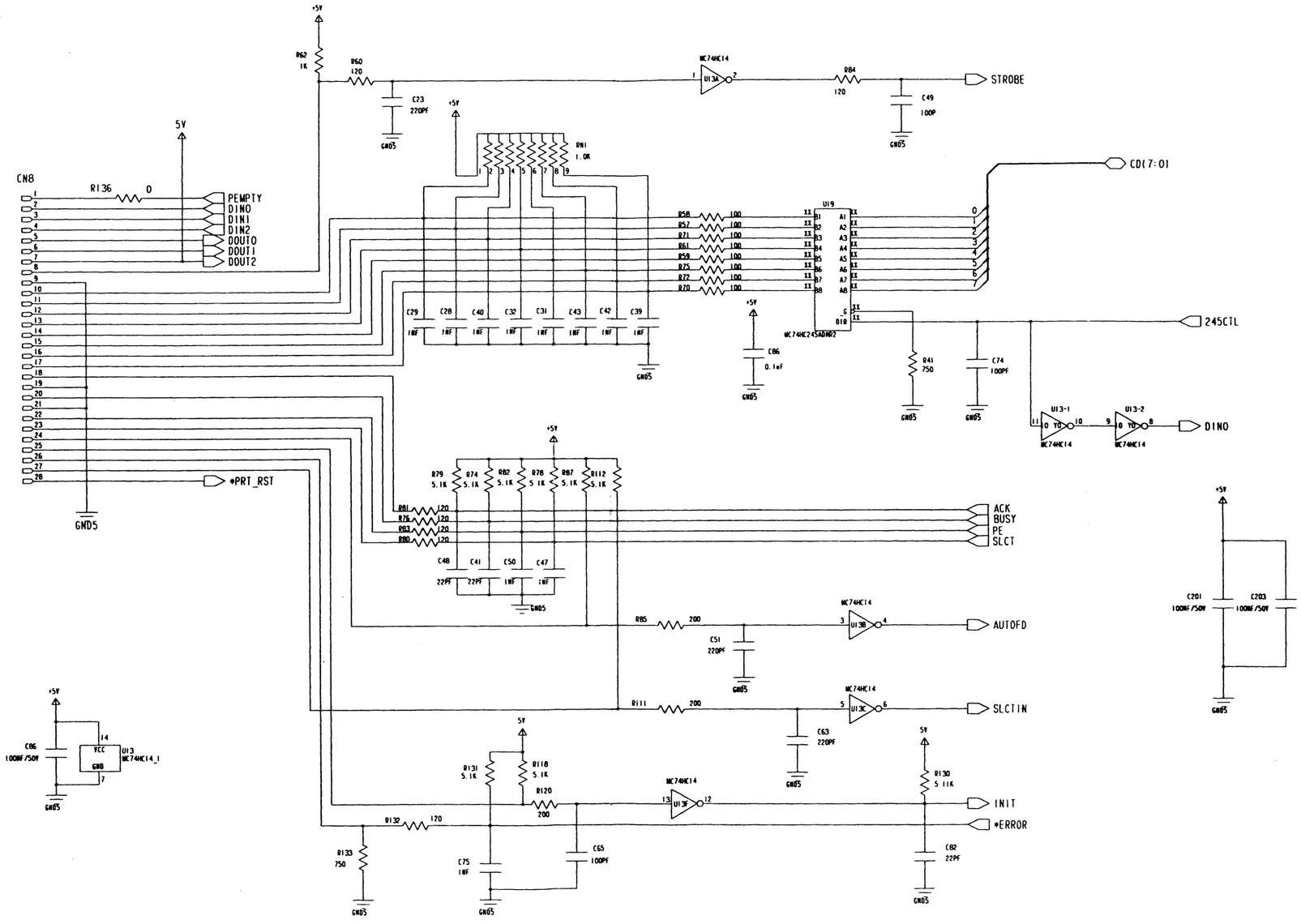

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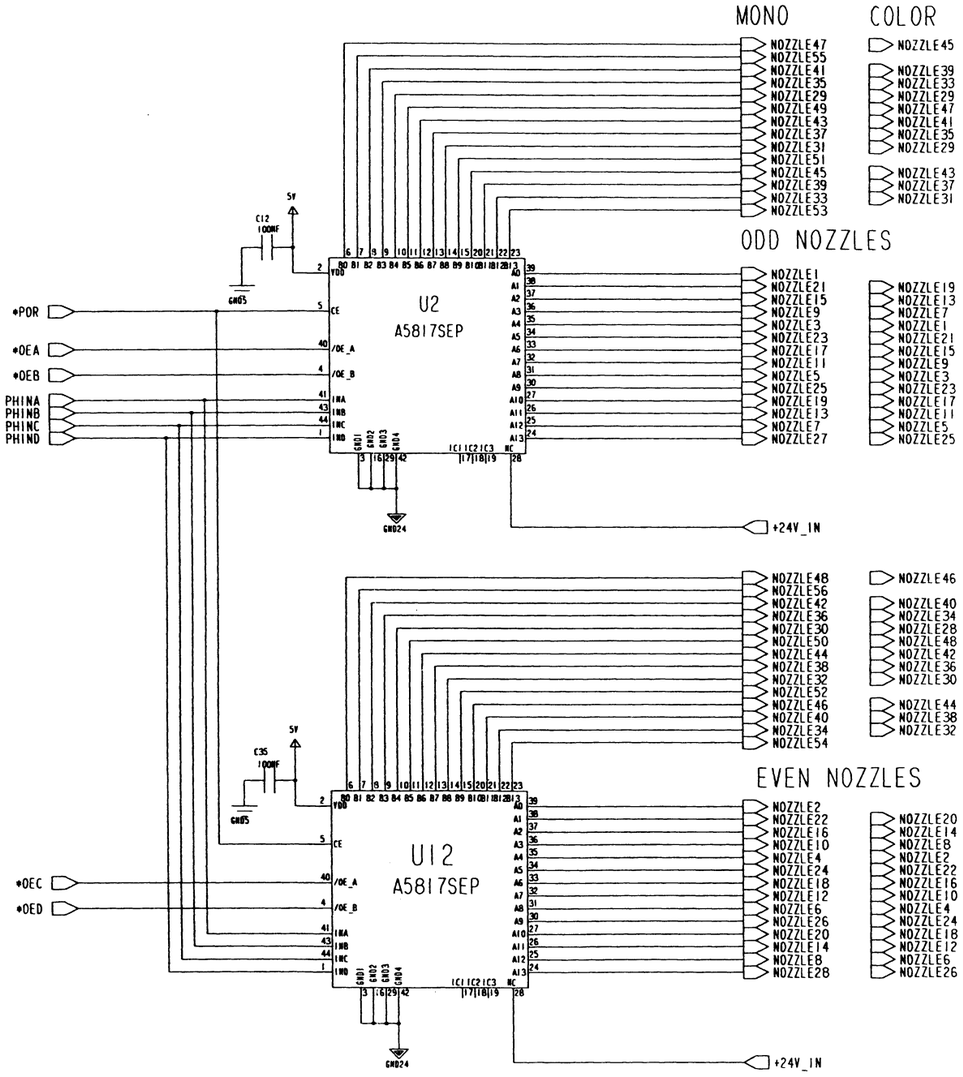

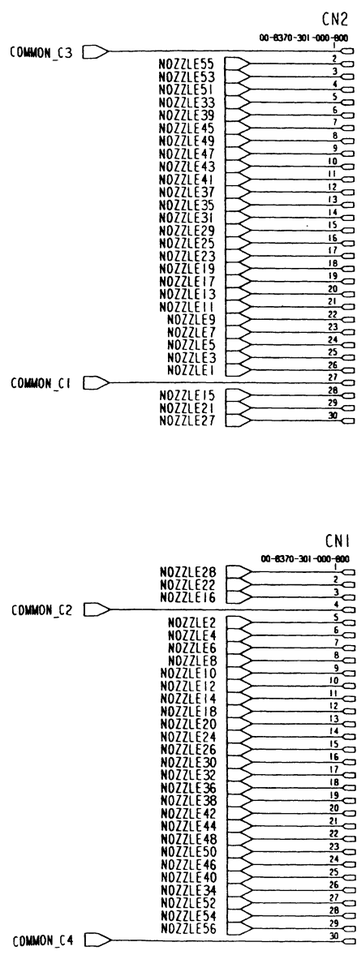

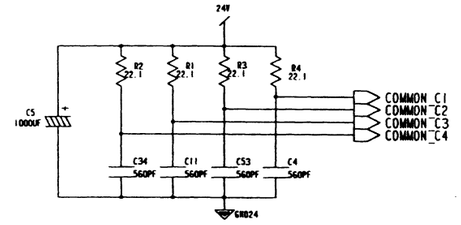

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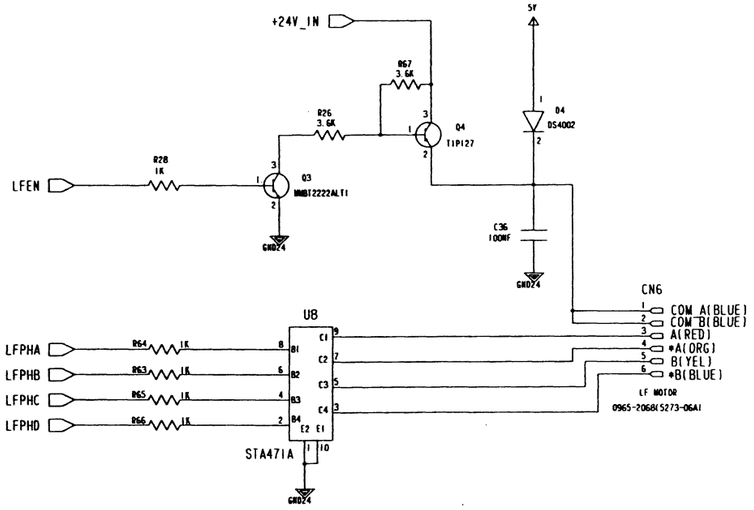

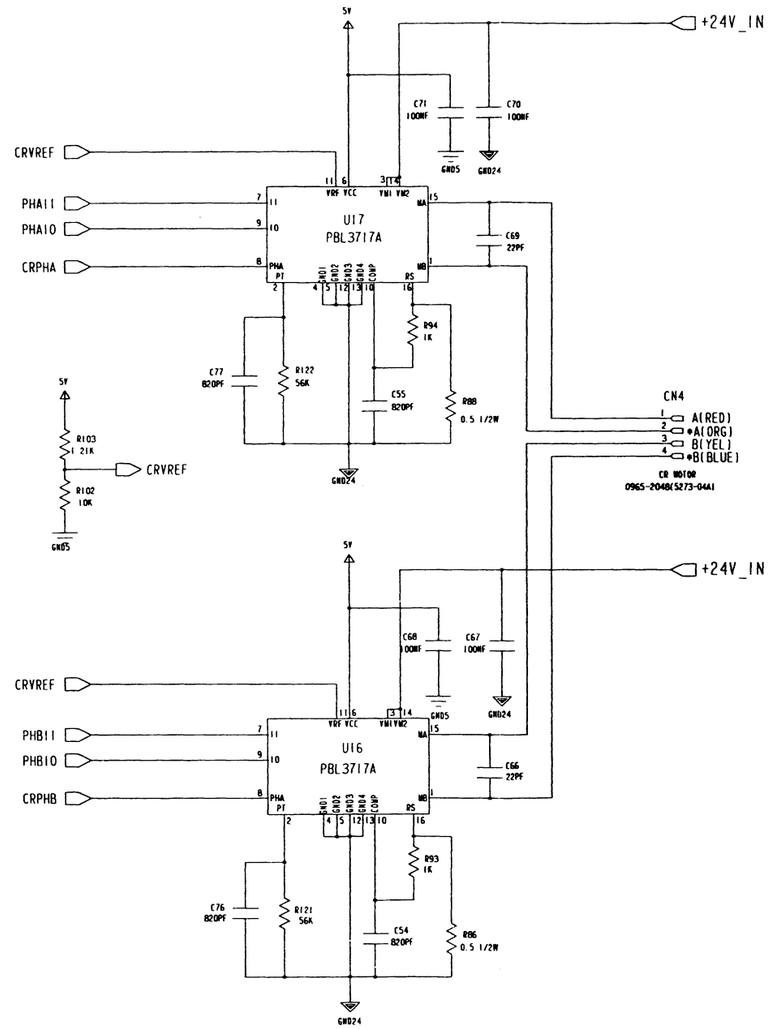

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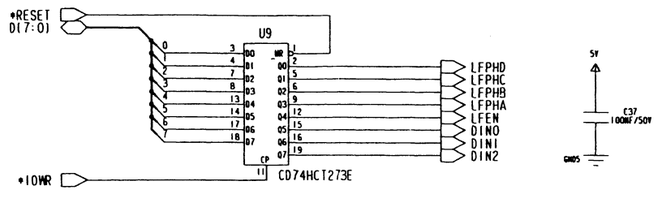

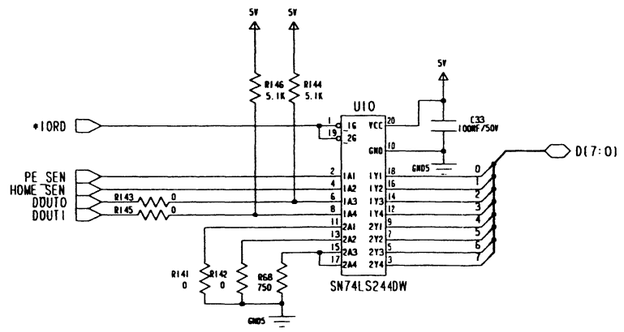

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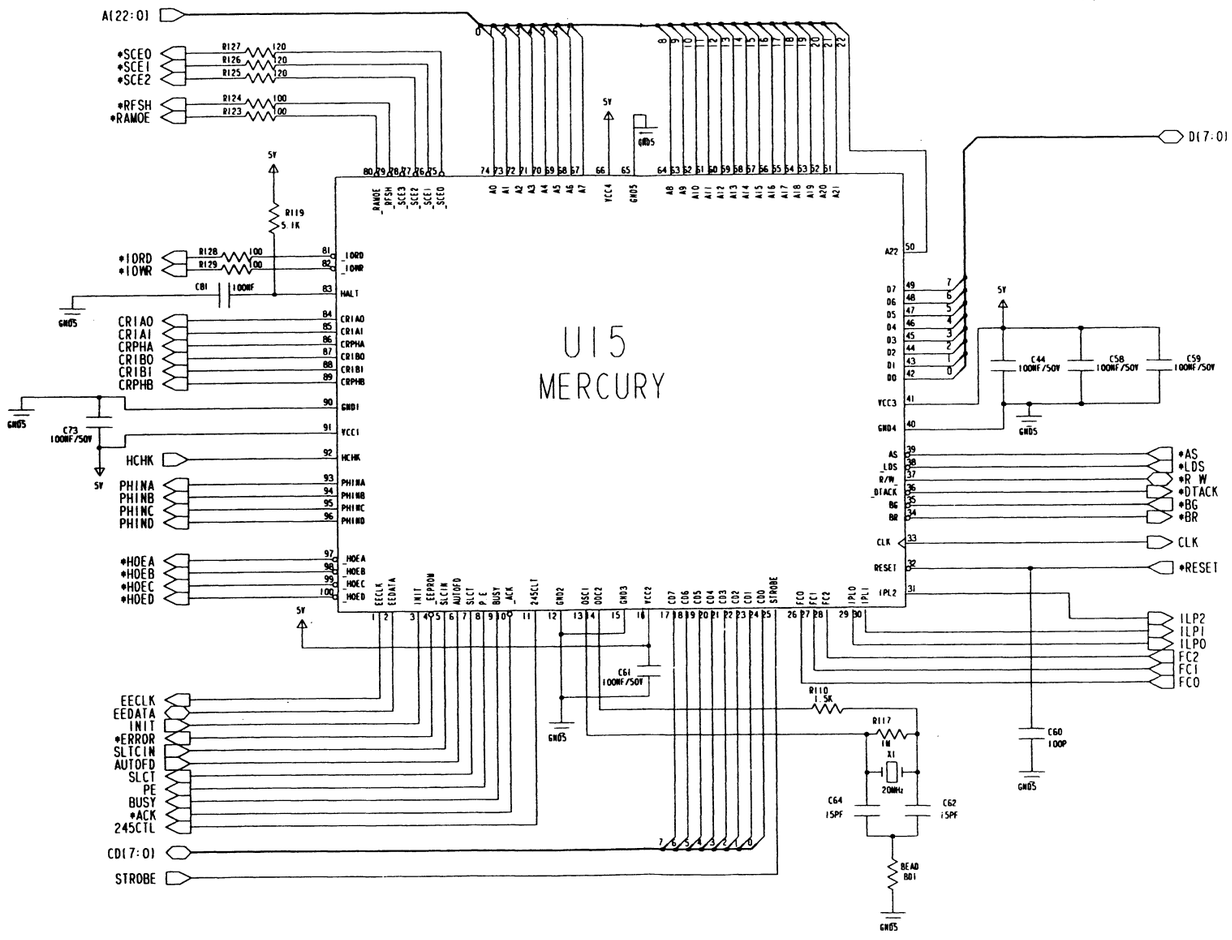
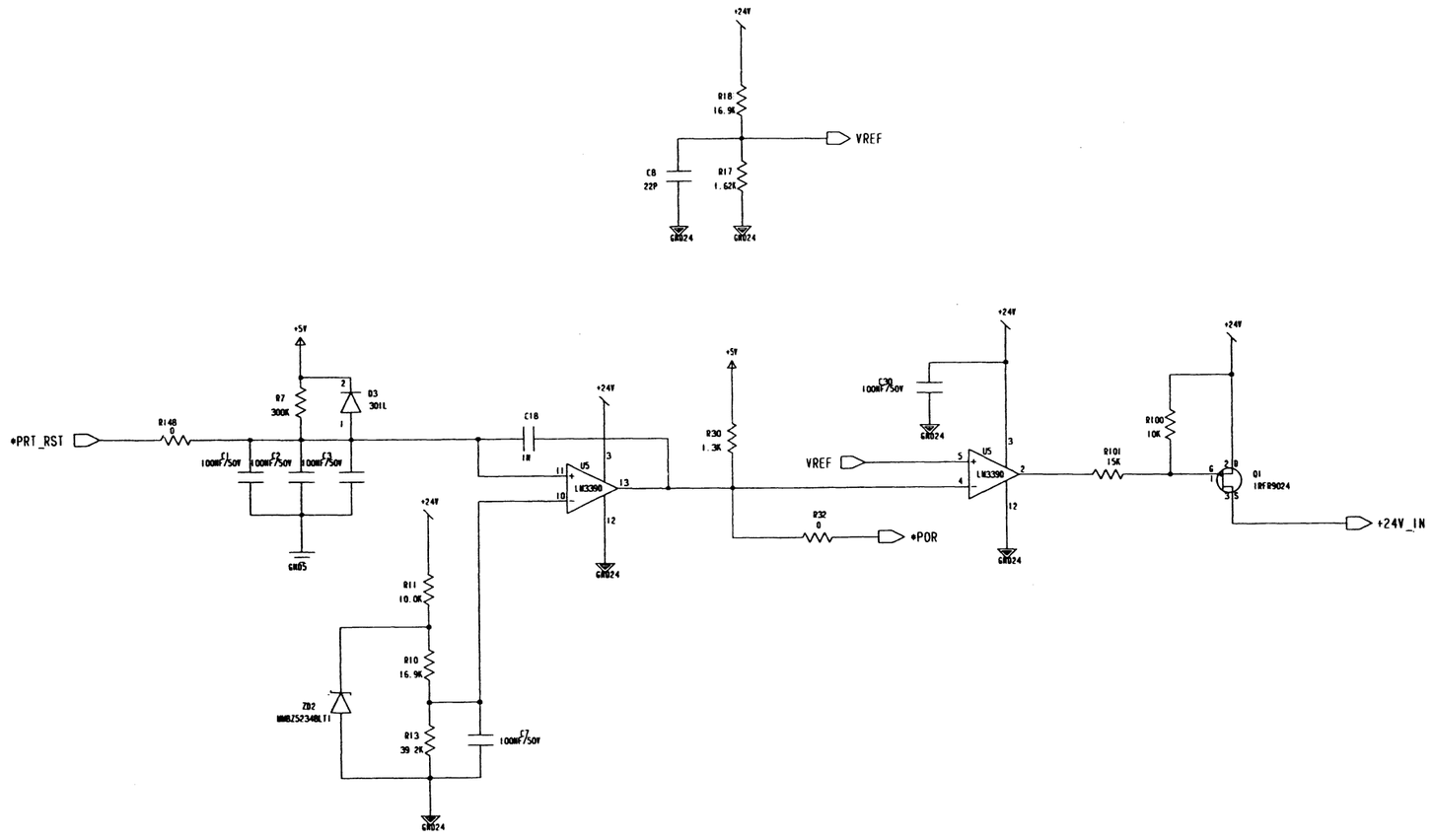
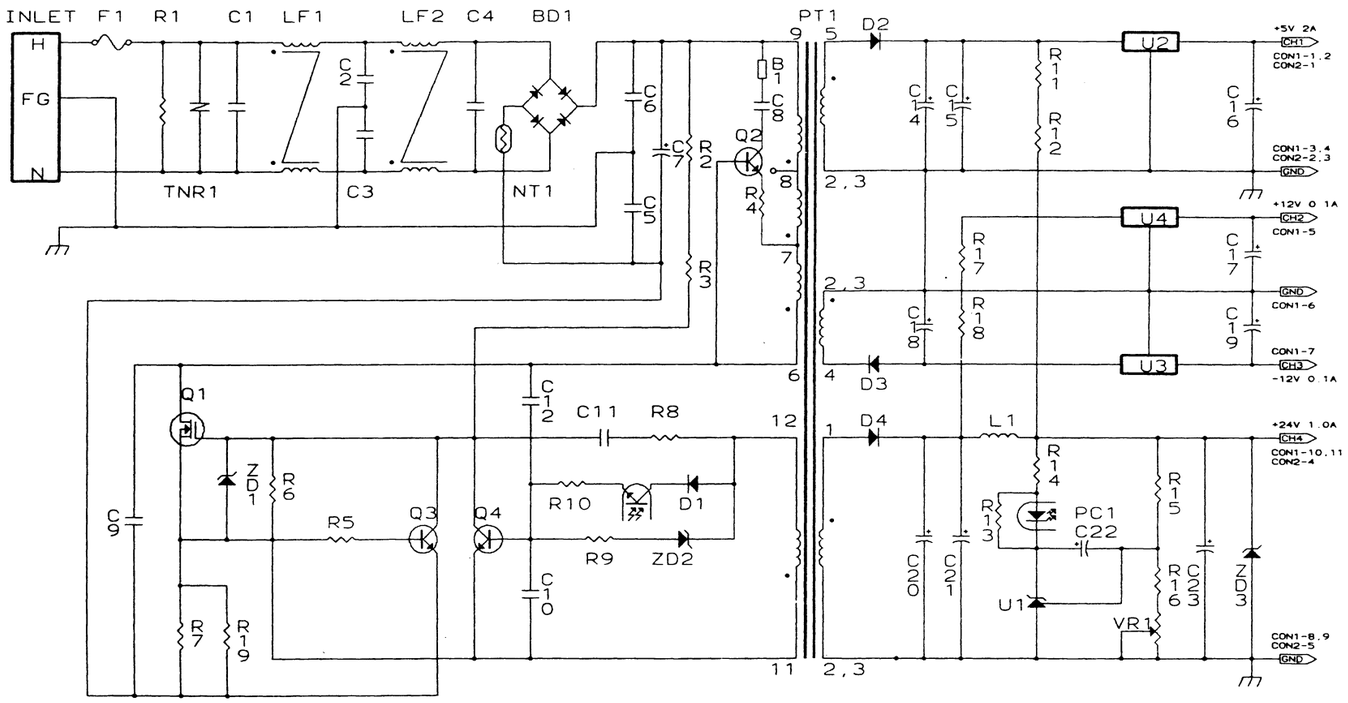
Printer Circuit



Printer Circuit



13-7 Power Supply Circuit



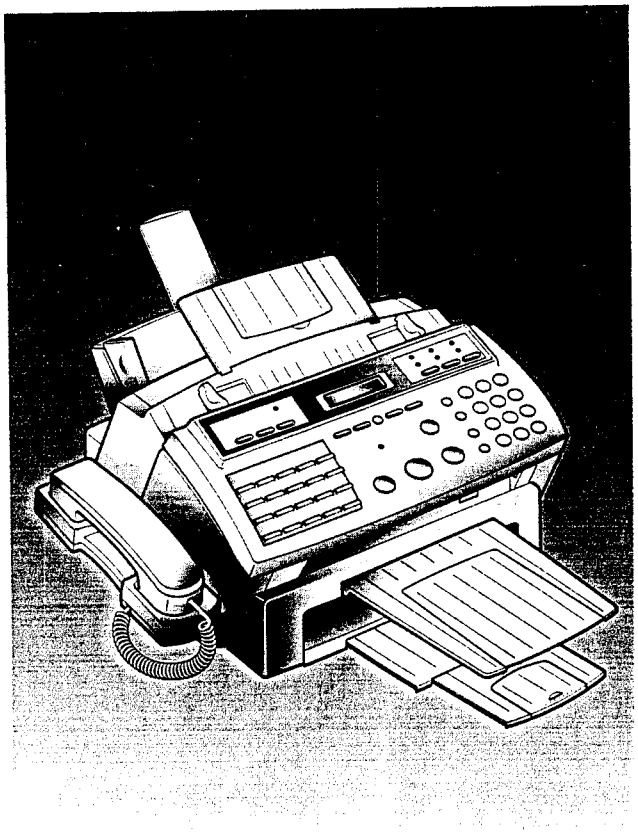
SAMSUNG

FACSIMILE

SF4000/4100/4120/4200/4220 ED1

APPENDIX

FACSIMILE



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1-4. SCAN

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2-2. PRINT
2-3. SCAN

Note : Use this manual for servicing machines with the # (pound sign) following the serial No.

Service Manual Code:JG68-60551A

SF4000/4100/4200/4120/4220 Change Note

Change Part	Part	Old	New	Remarks
PBA	Main PBA	JG96-00XXXX (XXXX: buyer-dependent)	JG96-00XXXX (XXXX: buyer-dependent)	LOGIC change
	Scan PBA	JG92-00563A	JG92-00005C	LOGIC change
	Print PBA	JG92-00210C	JG92-00628A	speed-up print
		※ New Print PBA requires.		
S/W	Main ROM	Version: V26/XX (SF4000/4100)	Version: V35/XX (SF4000/4100)	
		Version: V23/XX (SF4200)	Version: V30/XX (SF4200)	
	Print ROM	Version: V16/XX	Version: V31/XX	
		※ Print ROM should match Print PBA level.		
MOTOR	LF motor: Spec. change	JB31-10101A(75Ω) Part No.: PM42L-048-SYE9	JB31-10102F(50Ω) Part No.: PM42L-048-SYH1	Motor spec. change to speed-up print
	※ SVC: 1) Old motor not compatible with new machine. Change to both new motor and Print PBA 2) New motor compatible with old or new machine.			
CIS	CIS Assembly	JG96-00725A	JG96-00724A	
	CIS: Vendor change	0609-000109 (=895-390010AB)SEC Part No.:SIS216-2M03H)	0609-001043(DYNA Part No.:DIL100-58C)	Change to CIS height and connector type
	SCAN-CIS Harness	JG39-40020A	JG39-40020B	Connector type change
	CIS Spring	JG61-70002A	JG61-70541A	Change to spring height.
	※ CIS unit should be completely replaced. SVC Assembly consists of the CIS, SCAN-CIS Harness, and CIS Spring.			

Parts not changed	
1	Power Supply
2	LIU (Line Interface Unit) PBA
3	Enclosures

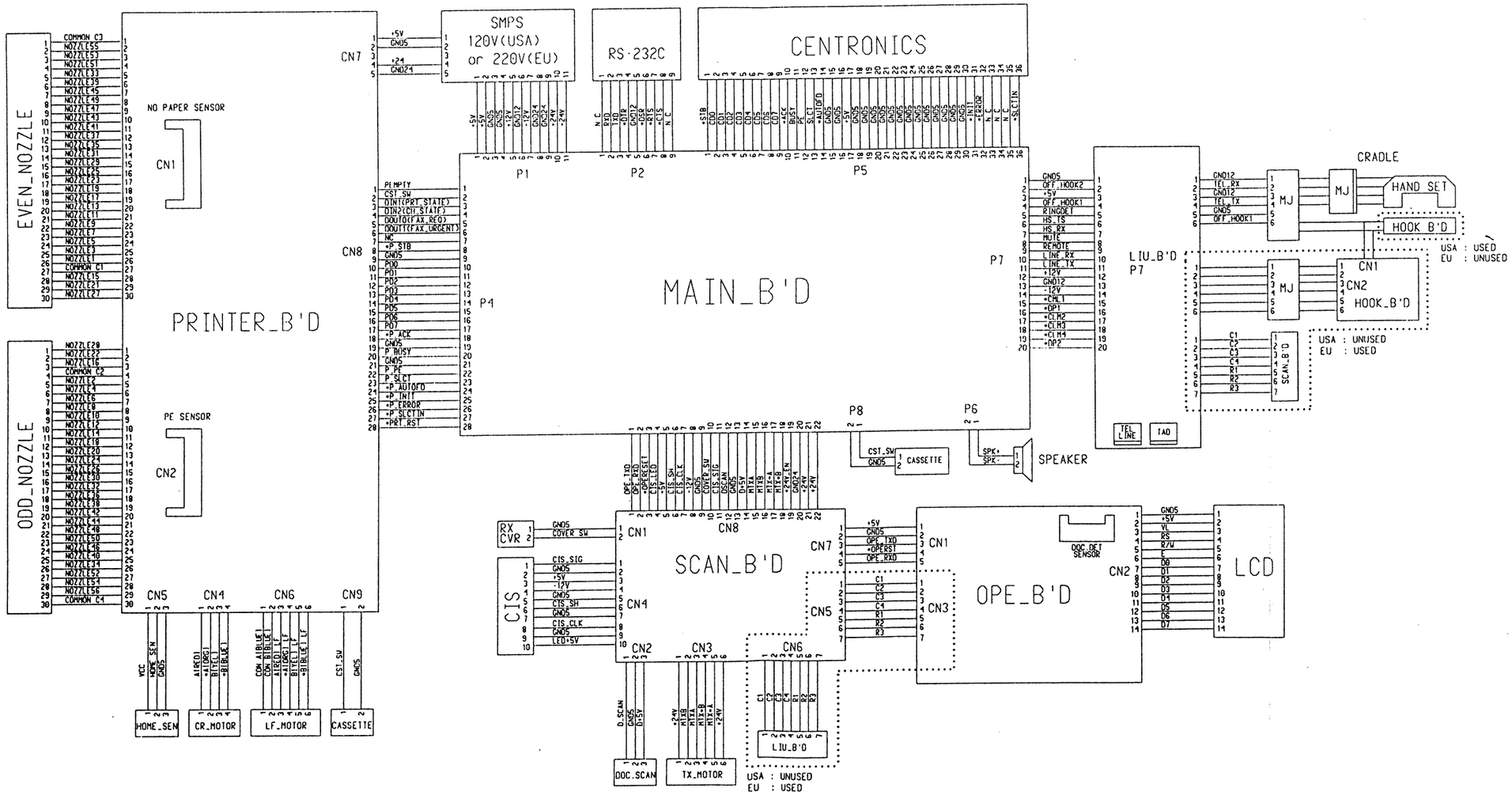
Interchangeability Log

Unit S/N:

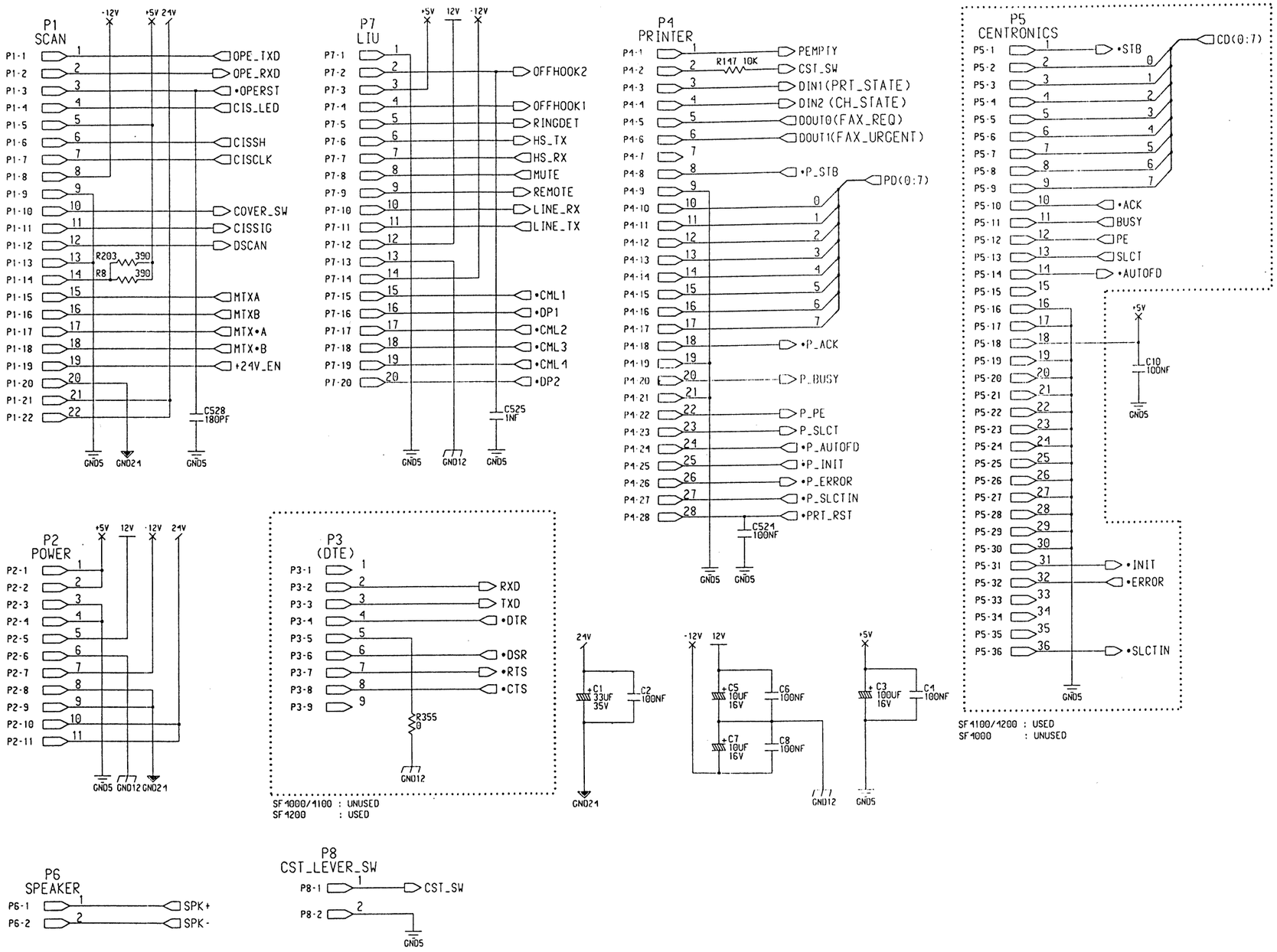
No.	Part	I/Change Status		✓	Note
		Part	Level		
1	Main PBA	OLD	Early		
			Late		
		NEW	Early		
			Late		
2	Scan PBA	OLD	Early		
			Late		
		NEW	Early		
			Late		
3	OPE PBA	OLD	Early		
			Late		
		NEW	Early		
			Late		
4	Print PBA	OLD	Early		
			Late		
		NEW	Early		Replace along with new LF motor (JB31-10102F, 50Ω)
			Late		
5	S/W ROM (Main, Print)	OLD	Early		
			Late		NOT interchangeable
		NEW	Early		NOT interchangeable
			Late		
6	Motor	OLD	Early		
			Late		Replace along with old Print PBA.
		NEW	Early		
			Late		
7	CIS	OLD	Early		
			Late		Use old CIS harness (JG39-40020) and CIS spring.
		NEW	Early		Use new CIS assembly (JG96-00724A) after replacing Lower frame (JG72-40037A) and Paper guide (JG72-40039A).
			Late		

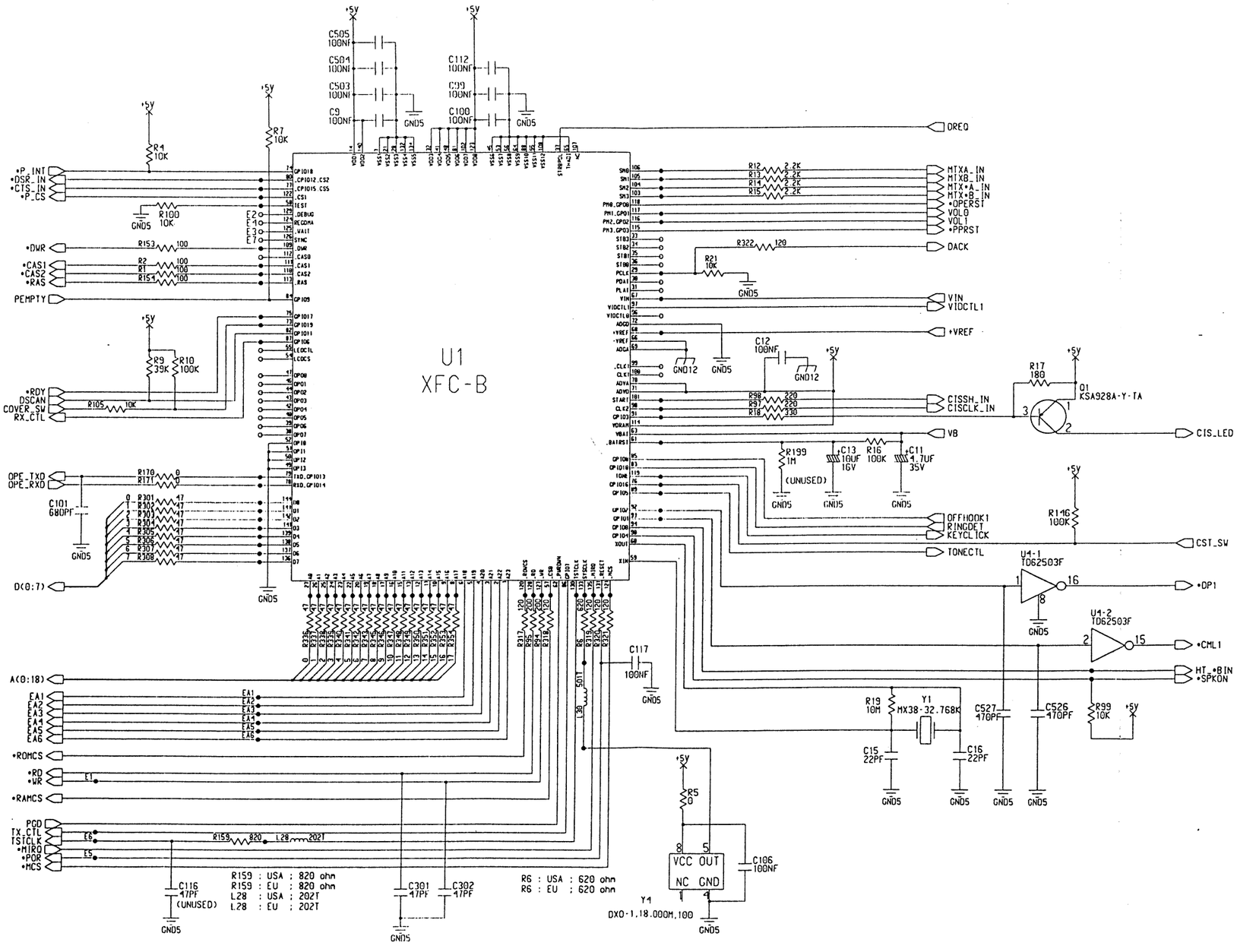
1. Schematic Diagrams

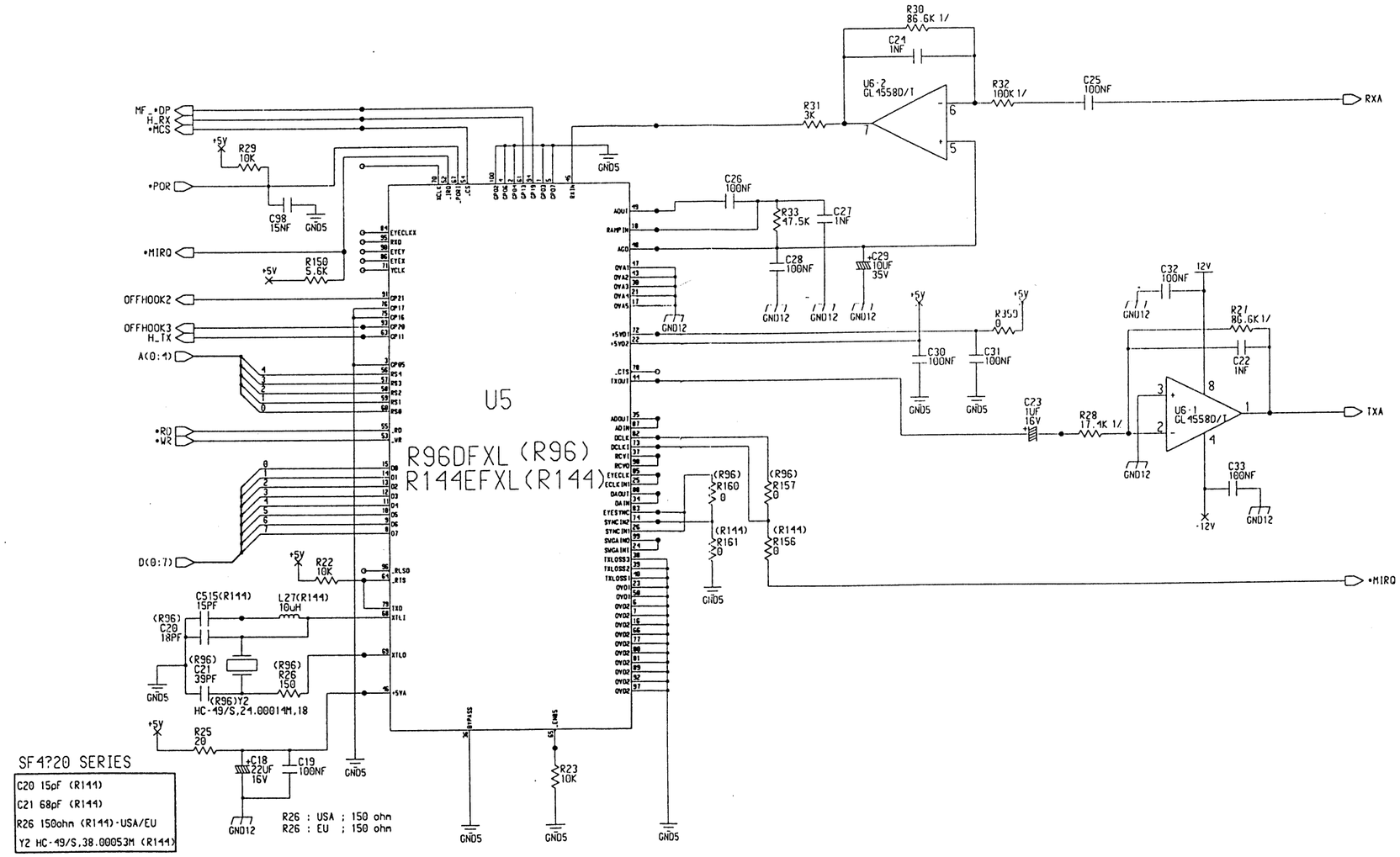
1-1 Wiring Diagram

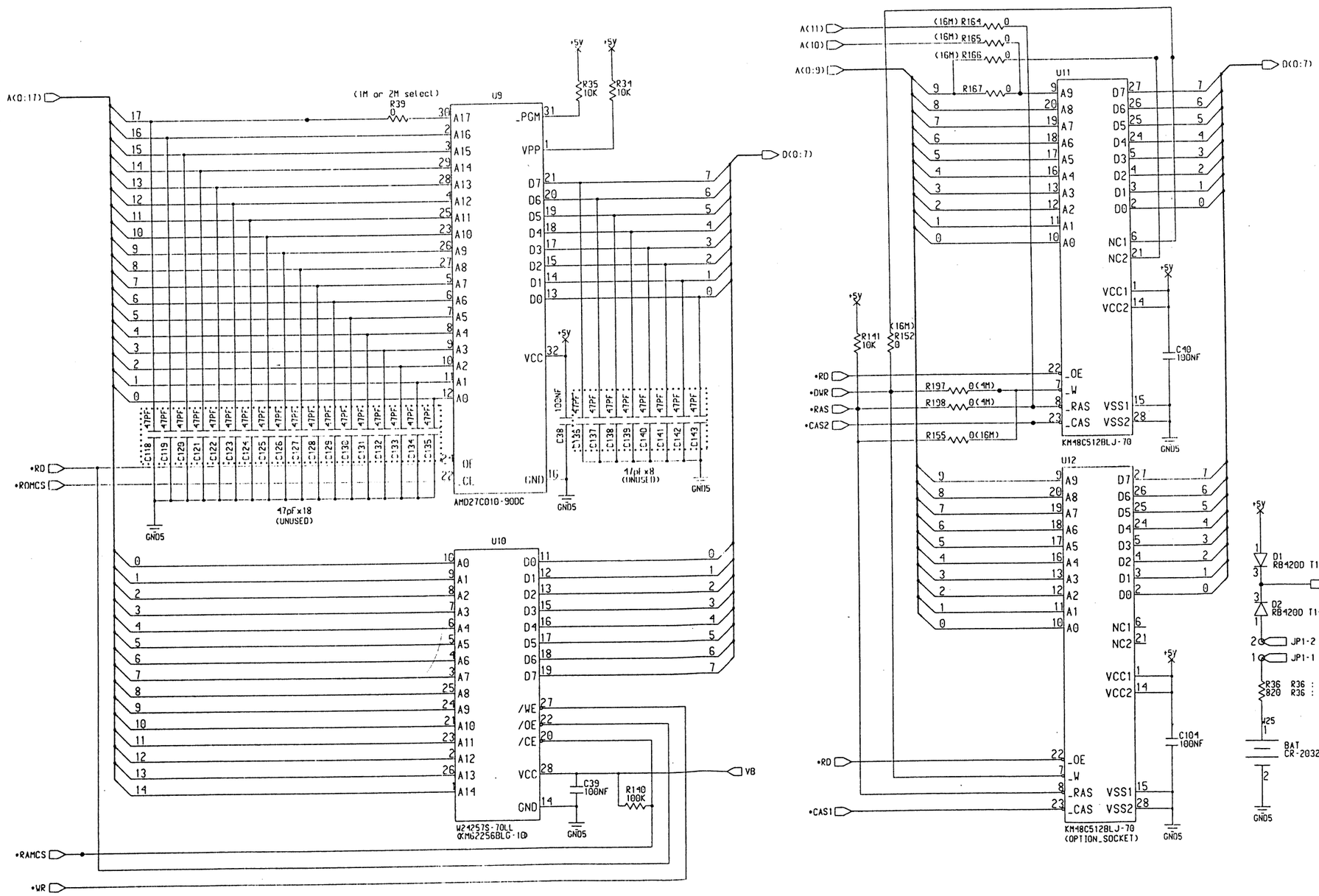


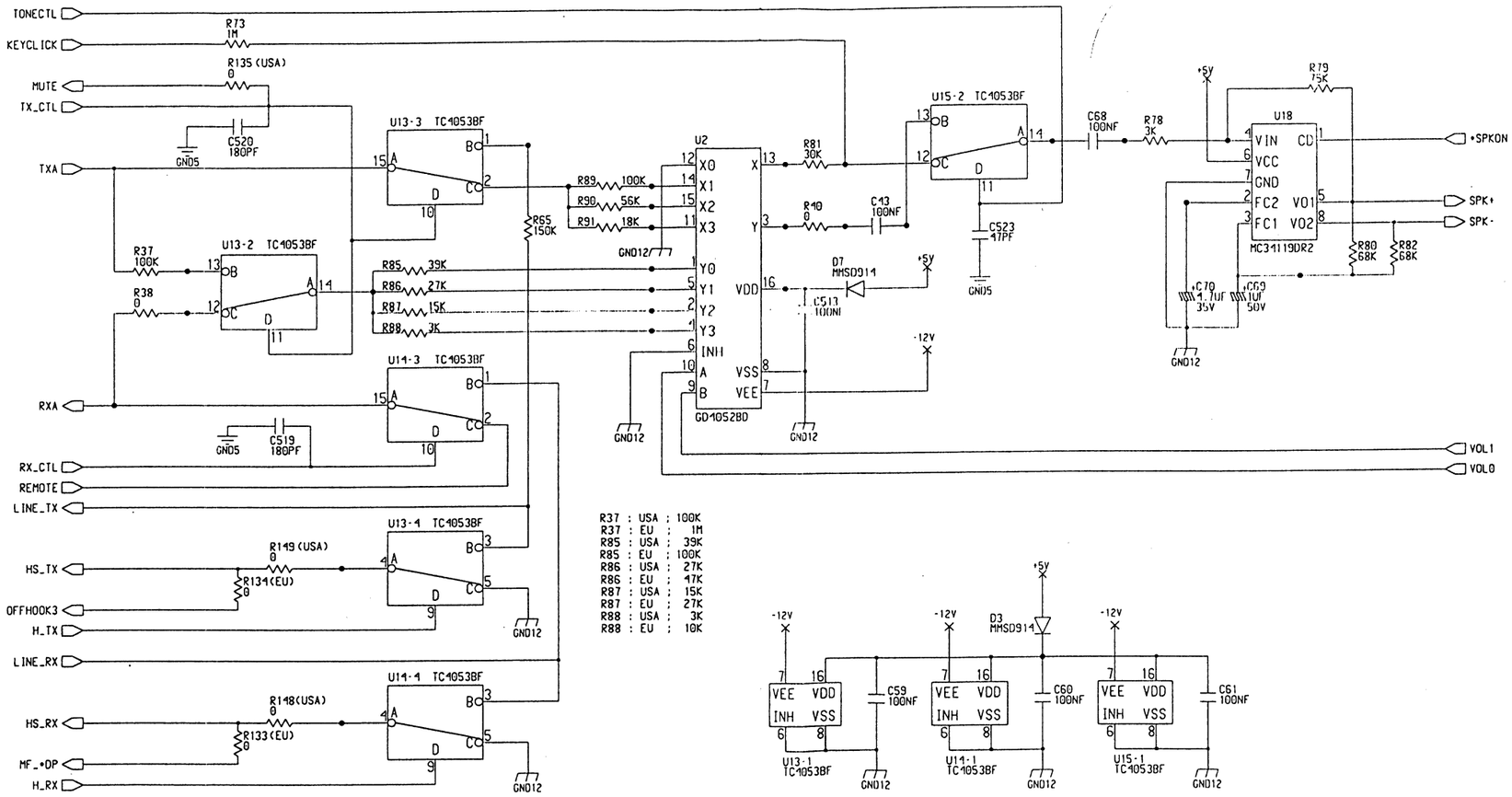
1-2 Main Circuit Diagrams



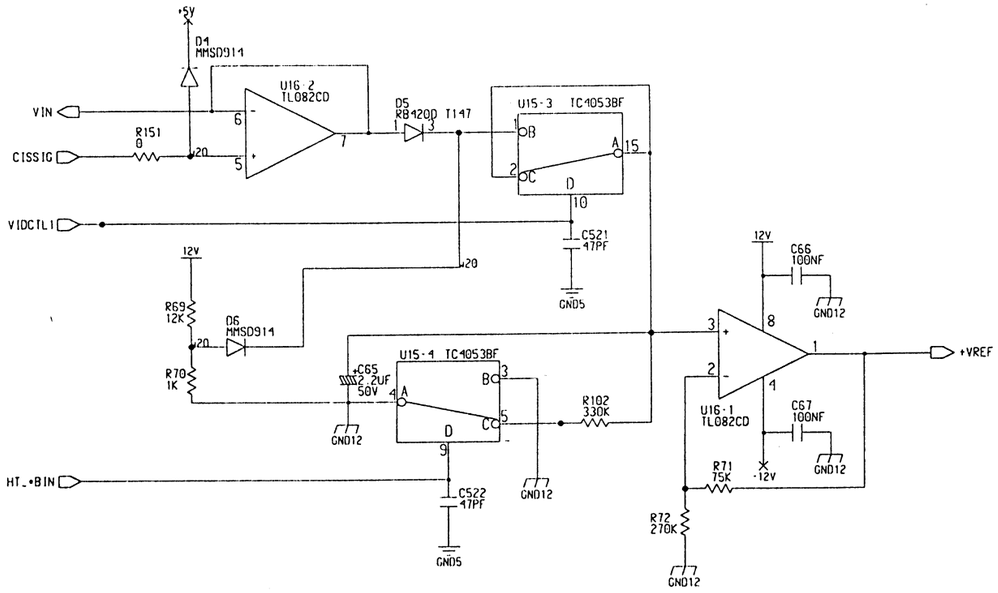

U1
XFC-B
*5V
GND5
GND12
C505 100NF
C504 100NI
C503 100NI
C9 100NF
C112 100NF
C99 100NI
C100 100NF
R4 10K
R7 10K
R100 10K
R9 39K
R10 100K
R105 10K
R170 0
R171 0
C101 680PF
R301 47
R302 47
R303 47
R304 47
R305 47
R306 47
R307 47
R308 47
*P_INT
*DSR_IN
*CTS_IN
*P_CS
*DVR
*CAS1
*CAS2
*RAS
PEMPTY
*RDY
DSCAN
COVER_SW
RX_CTL
OPE_TXD
OPE_RXD
D(0:7)
A(0:18)
EA1
EA2
EA3
EA4
EA5
EA6
*ROMCS
*RD
*WR
*RAMCS
PCD
TX_CTL
TSTCLK
*MIRQ
*POR
*MCS
R153 100
R2 100
R1 100
R151 100
R159 820 L28 202T
R159 : USA : 820 ohm
R159 : EU : 820 ohm
L28 : USA : 202T
L28 : EU : 202T
C116 47PF (UNUSED)
C301 47PF
C302 47PF
C117 100NF
R6 : USA : 620 ohm
R6 : EU : 620 ohm
R5 0
Y1
DX0-1.18.000M.100
C106 100NF
OREQ
MTXA_IN
MTXB_IN
MTX+A_IN
MTX+B_IN
*OPERST
VOL0
VOL1
*PPRST
DACK
VIN
VIDCTL1
+VREF
CISSH_IN
CISCLK_IN
VB
OFFHOOK1
RINGDET
KEYCLICK
TONECTL
R12 2.2K
R13 2.2K
R14 2.2K
R15 2.2K
R322 120
R21 10K
C12 100NF
R98 220
R97 220
R18 330
R17 180
Q1 KSA928A-Y-TA
R199 1M (UNUSED)
C13 10UF 16V
R16 100K
C11 4.7UF 35V
R114 100K
CST_SW
U4-1 TD62503F
U4-2 TD62503F
*DP1
*CML1
HT_*BIN
*SPKON
R19 10M
Y1 MX38-32.768K
C15 22PF
C16 22PF
C527 470PF
C526 470PF
R99 10K

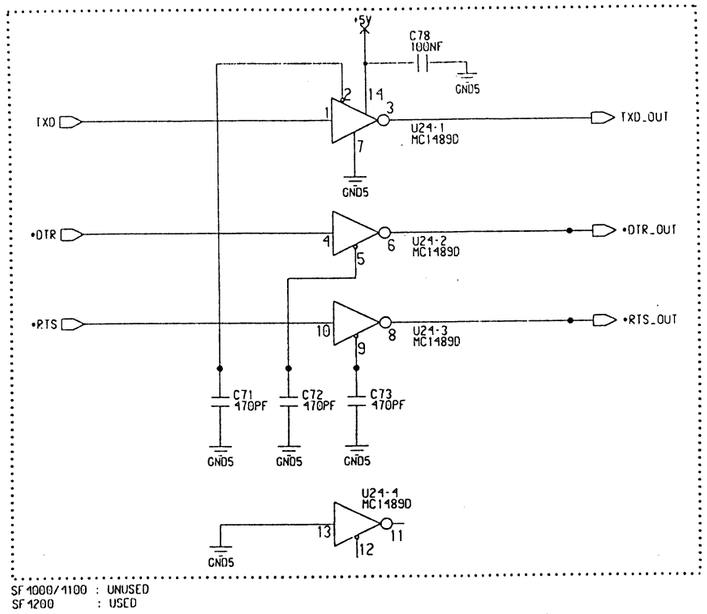

U5
R96DFXL (R96)
R144EFXL(R144)
MF_*DP
H_RX
*MCS
*POR
*MIRQ
OFFHOOK2
OFFHOOK3
H_TX
A(0:4)
D(0:7)
*RD
*WR
R30 86.6K 1/
C24 1NF
U6-2 GL4558D/I
R31 3K
R32 100K 1/
C25 100NF
RXA
R29 10K
C98 15NF
GND5
R150 5.6K
C26 100NF
R33 47.5K
C27 1NF
C28 100NF
+C29 10UF 35V
GND12
R359 0
C30 100NF
C31 100NF
C32 100NF
R21 86.6K 1/
C22 1NF
U6-1 GL4558D/I
C23 1UF 16V
R28 17.4K 1/
TXA
C33 100NF
-12V
R22 10K
C515(R144) 15PF
L27(R144) 10uH
(R96) C20 18PF
(R96) C21 39PF
(R96) R26 150
(R96)Y2 HC-49/S,24.00014M,18
R25 20
+C18 22UF 16V
C19 100NF
R23 10K
BYPASS
LINKS
(R96) R160 0
(R96) R157 0
(R144) R161 0
(R144) R156 0
*MIRQ
SF4?20 SERIES
C20 15pF (R144)
C21 68pF (R144)
R26 150ohm (R144)-USA/EU
Y2 HC-49/S,38.00053M (R144)
R26 : USA ; 150 ohm
R26 : EU ; 150 ohm


A(0:17)
(1M or 2M select)
R39
0
U9
AMD27C010-90DC
_PGM
VPP
VCC
GND
OE
CE
+5V
R35 10K
R31 10K
D(0:7)
47pFx18 (UNUSED)
47pFx8 (UNUSED)
C38 100NF
C39 100NF
R140 100K
GND5
*RD
*ROMCS
*RAMCS
*WR
U10
W24257S-70LL
KM62256BLG-10
VB
A(11)
A(10)
A(0:9)
(16M) R164 0
(16M) R165 0
(16M) R166 0
R167 0
U11
U12
KM48C512BLJ-70
KM48C512BLJ-70 (OPTION_SOCKET)
R141 10K
(16M) R152 0
*DWR
*RAS
*CAS2
*CAS1
R197 0(4M)
R198 0(4M)
R155 0(16M)
C10 100NF
C104 100NF
D1 RB420D T147
D2 RB420D T147
JP1-2
JP1-1
R36 820
R36 : USA ; 820 ohm
R36 : EU ; 820 ohm
BAT CR-2032T6

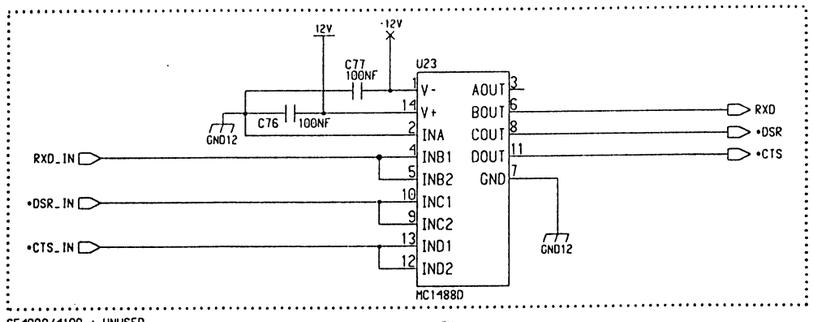


R37 : USA ; 100K
R37 : EU ; 1M
R85 : USA ; 39K
R85 : EU ; 100K
R86 : USA ; 27K
R86 : EU ; 47K
R87 : USA ; 15K
R87 : EU ; 27K
R88 : USA ; 3K
R88 : EU ; 10K

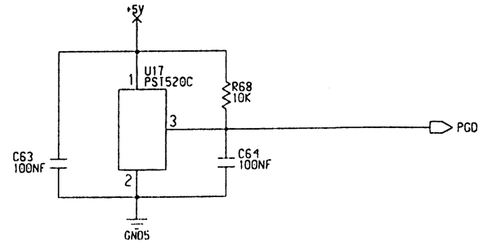


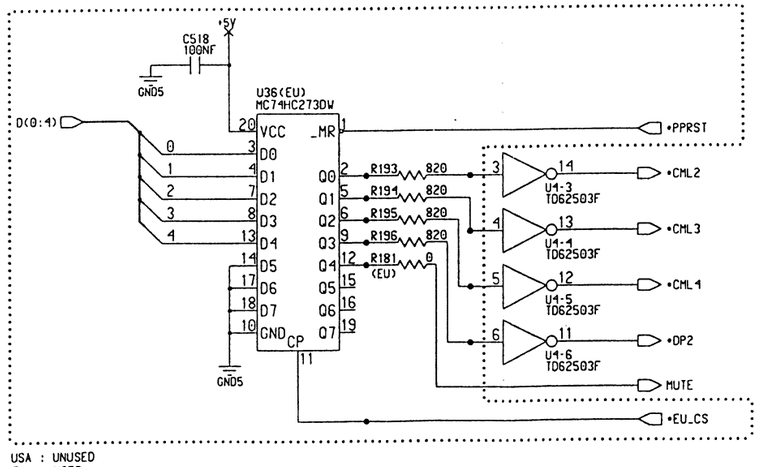


SF1000/1100 : UNUSED
SF1200 : USED

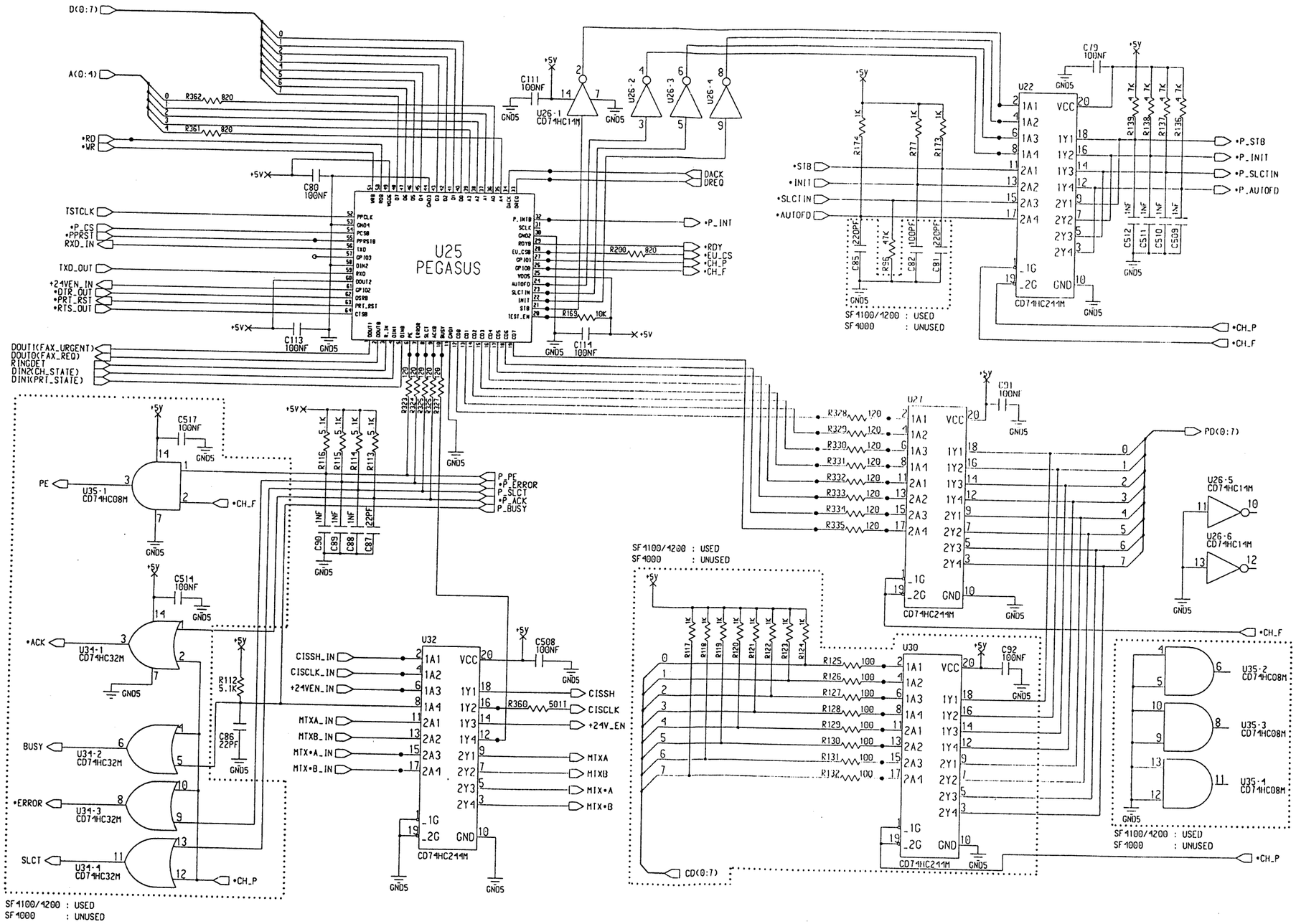


SF1000/1100 : UNUSED
SF1200 : USED

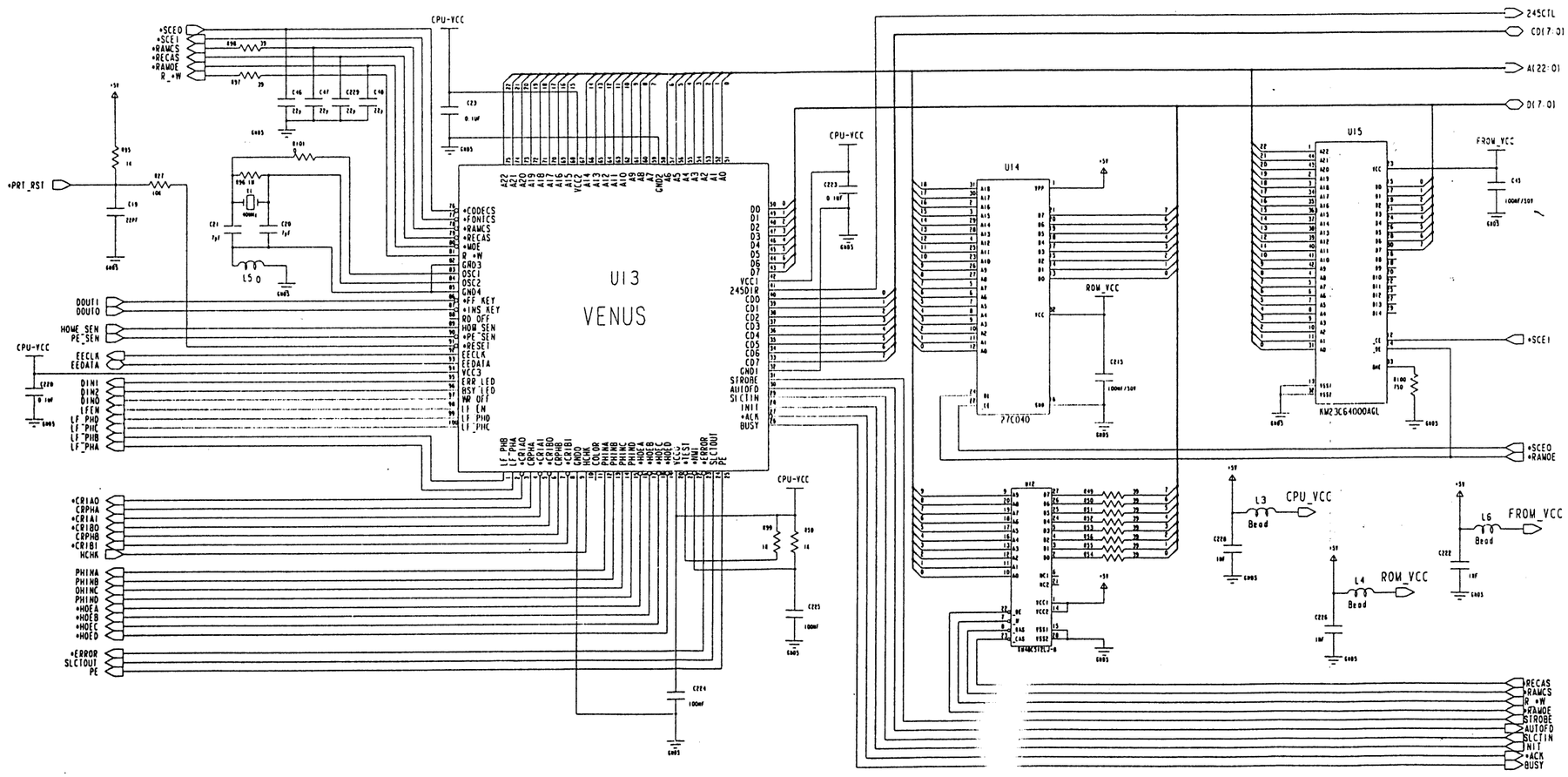


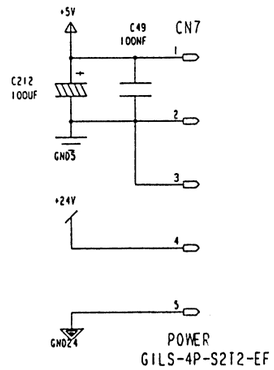


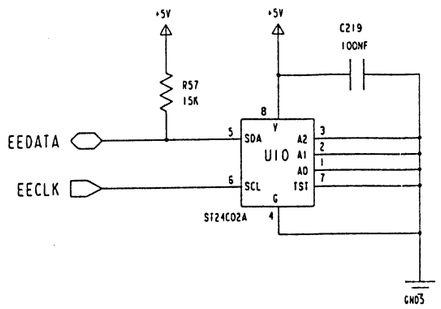
USA : UNUSED
EU : USED

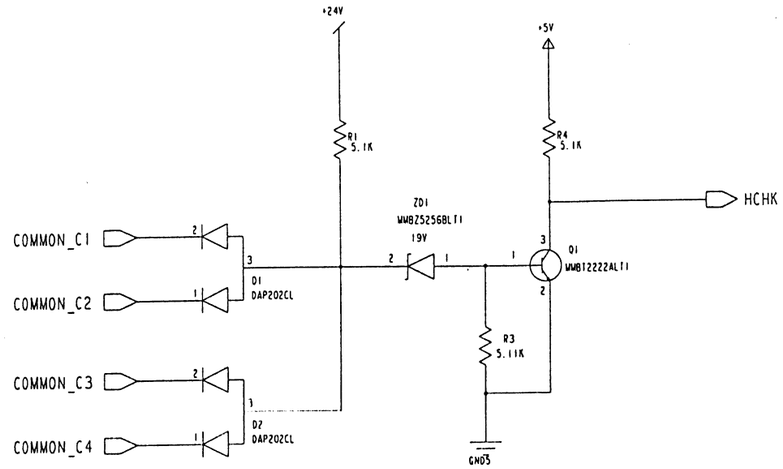

U25
PEGASUS
U26-1 CD74HC14M
U26-2
U26-3
U26-4
U26-5 CD74HC14M
U26-6 CD74HC14M
U22 CD74HC244M
U27 CD74HC244M
U30 CD74HC244M
U32 CD74HC244M
U35-1 CD74HC08M
U35-2 CD74HC08M
U35-3 CD74HC08M
U34-1 CD74HC32M
U34-2 CD74HC32M
U34-3 CD74HC32M
U34-4 CD74HC32M
D(0:7)
A(0:4)
*RD
*WR
TSTCLK
*P_CS
*PPRST
RXD_IN
TXD_OUT
+24VEN_IN
*DIR_OUT
*PRT_RST
*RTS_OUT
DOUT(FAX_URGENT)
DOUT(FAX_REQ)
RINGDET
DIN2(CH_STATE)
DIN1(PRT_STATE)
DACK
DREQ
*P_INT
*RDY
*EU_CS
*CH_F
*STB
*INIT
*SLCTIN
*AUTOFD
*P_STB
*P_INIT
*P_SLCTIN
*P_AUTOFD
*CH_P
SF4100/4200 : USED
SF4000 : UNUSED
P_PE
*P_ERROR
P_SLCT
*P_ACK
P_BUSY
PE
*ACK
BUSY
*ERROR
SLCT
CISSH_IN
CISCLK_IN
+24VEN_IN
MTXA_IN
MTXB_IN
MTX*A_IN
MTX*B_IN
CISSH
CISCLK
+24V_EN
MTXA
MTXB
MTX*A
MTX*B
PD(0:7)
CD(0:7)

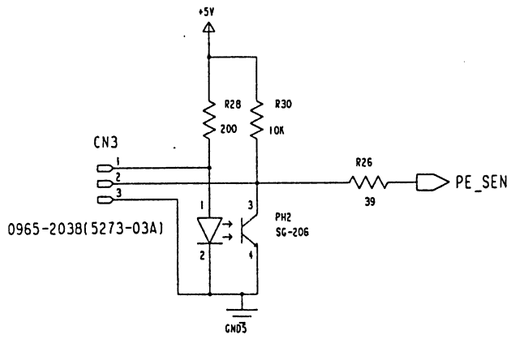
1-3 Printer Circuit Diagrams

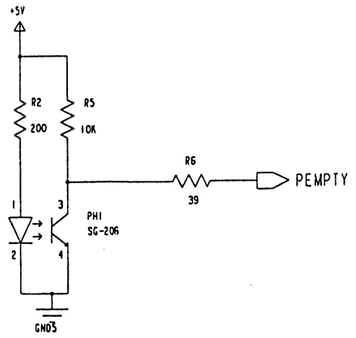


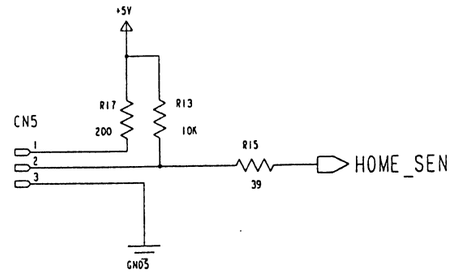

+5V
C49
100NF
CN7
C212
100UF
1
2
3
GND3
+24V
4
5
GND24
POWER
GILS-4P-S2T2-EF

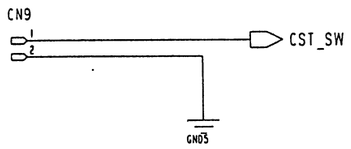

+5V
+5V
C219
100NF
R57
15K
EEDATA
EECLK
8
V
SDA
A2
A1
A0
TST
SCL
G
5
6
3
2
1
7
4
U10
ST24C02A
GND3

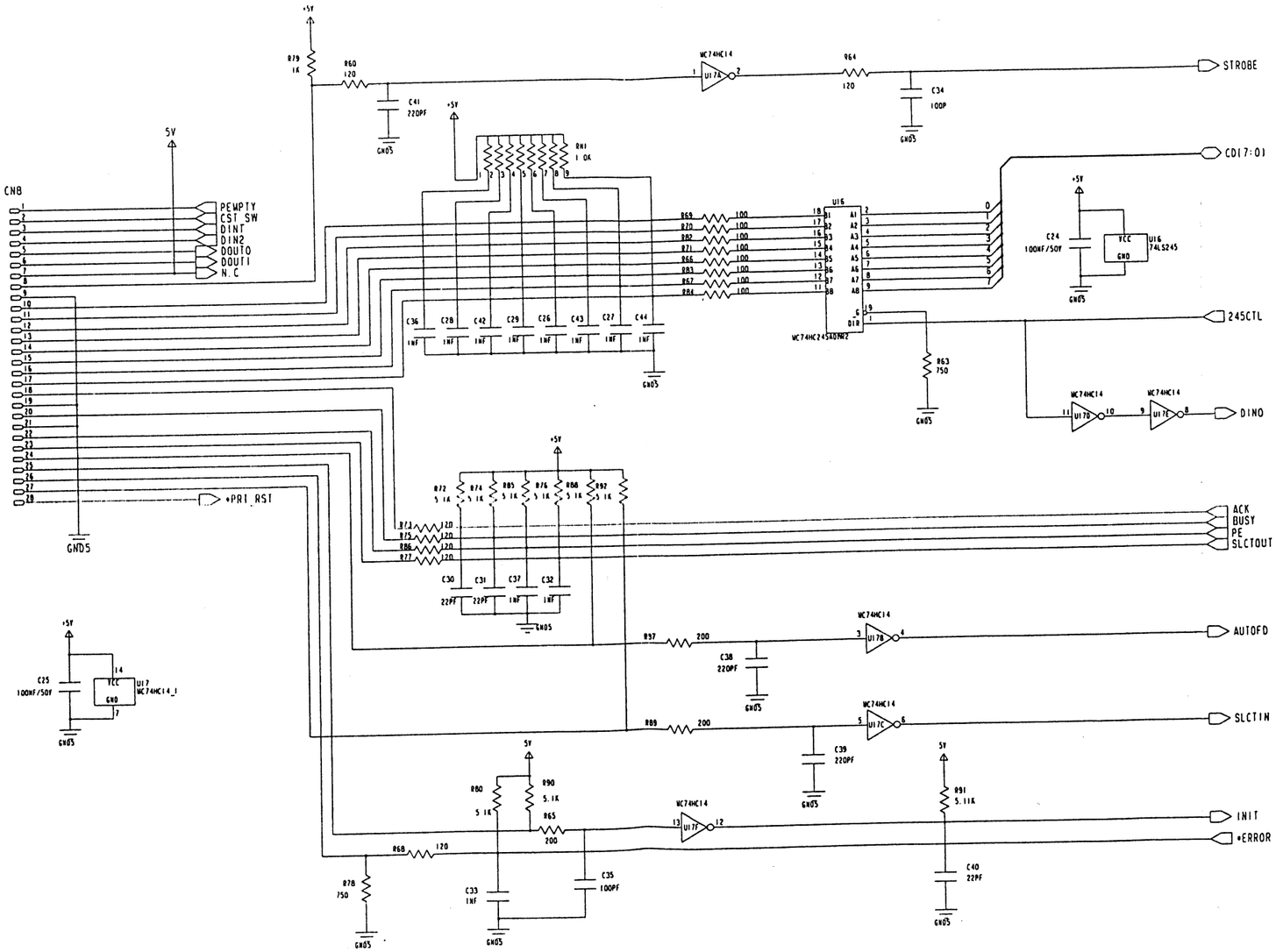

+24V
+5V
R1
5.1K
R4
5.1K
ZD1
MMBZ5256BLT1
19V
HCHK
COMMON_C1
COMMON_C2
COMMON_C3
COMMON_C4
D1
DAP202CL
D2
DAP202CL
Q1
MMBT2222ALT1
R3
5.11K
GND3

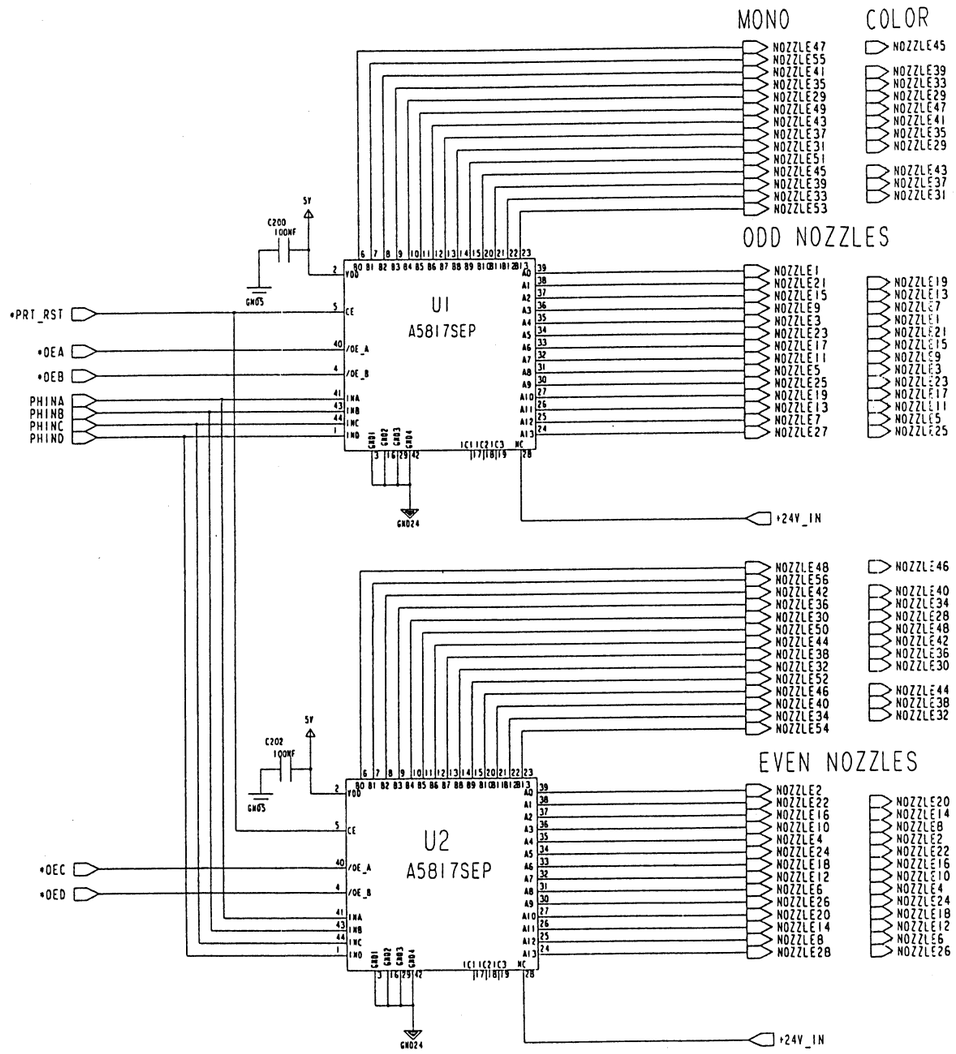

+5V
R28
200
R30
10K
CN3
1
2
3
R26
39
PE_SEN
0965-2038(5273-03A)
PH2
SG-206
GND3

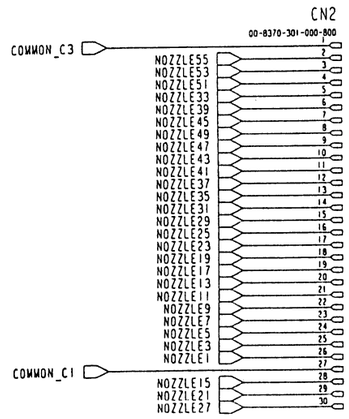

+5V
R2
200
R5
10K
R6
39
PEMPTY
PH1
SG-206
GND3

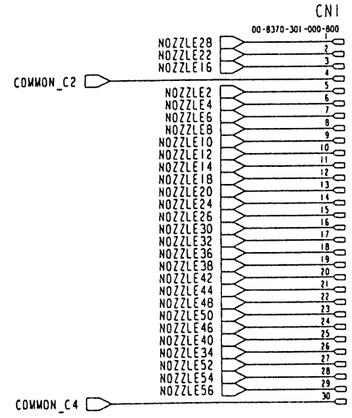

+5V
R17
200
R13
10K
CN5
R15
39
HOME_SEN
GND3

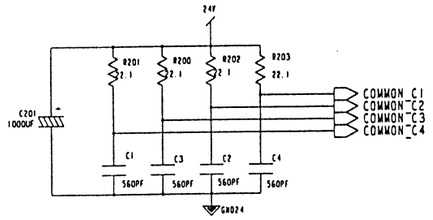

CN9
1
2
CST_SW
GND3

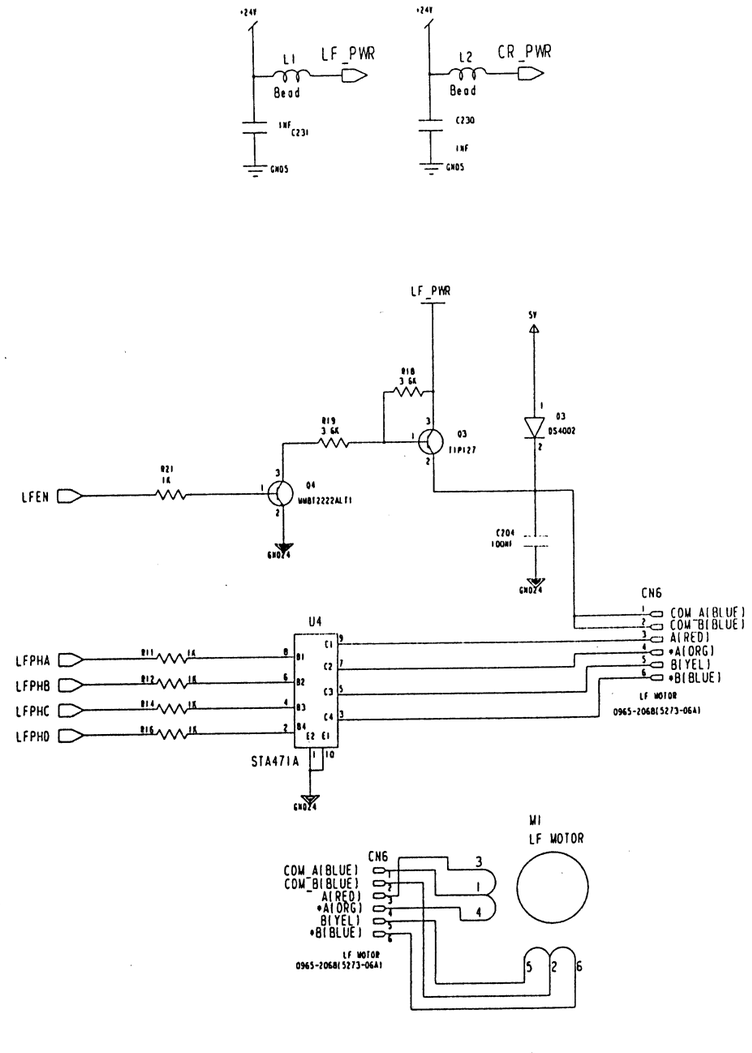

CN8
PEWPTY
CST_SW
DIN1
DIN2
DOUT0
DOUT1
N.C
*PRI_RST
STROBE
CD(7:0)
245CTL
DINO
ACK
BUSY
PE
SLCTOUT
AUTOFD
SLCTIN
INIT
*ERROR
U16
74LS245
WC74HC14
WC74HC245ADWR2
5V
GND5


MONO
COLOR
NOZZLE47
NOZZLE55
NOZZLE41
NOZZLE35
NOZZLE29
NOZZLE49
NOZZLE43
NOZZLE37
NOZZLE31
NOZZLE51
NOZZLE45
NOZZLE39
NOZZLE33
NOZZLE53
NOZZLE45
NOZZLE39
NOZZLE33
NOZZLE29
NOZZLE47
NOZZLE41
NOZZLE35
NOZZLE29
NOZZLE43
NOZZLE37
NOZZLE31
ODD NOZZLES
5V
C200
100NF
GND5
U1
A5817SEP
*PRT_RST
*OEA
*OEB
PHINA
PHINB
PHINC
PHIND
VDD
CE
/OE_A
/OE_B
INA
INB
INC
IND
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
A11
A12
A13
NC
CAS1
CAS2
CAS3
CAS4
IC1
IC2
IC3
GND24
+24V_IN
NOZZLE1
NOZZLE21
NOZZLE15
NOZZLE9
NOZZLE3
NOZZLE23
NOZZLE17
NOZZLE11
NOZZLE5
NOZZLE25
NOZZLE19
NOZZLE13
NOZZLE7
NOZZLE27
NOZZLE19
NOZZLE13
NOZZLE7
NOZZLE1
NOZZLE21
NOZZLE15
NOZZLE9
NOZZLE3
NOZZLE23
NOZZLE17
NOZZLE11
NOZZLE5
NOZZLE25
NOZZLE48
NOZZLE56
NOZZLE42
NOZZLE36
NOZZLE30
NOZZLE50
NOZZLE44
NOZZLE38
NOZZLE32
NOZZLE52
NOZZLE46
NOZZLE40
NOZZLE34
NOZZLE54
NOZZLE46
NOZZLE40
NOZZLE34
NOZZLE28
NOZZLE48
NOZZLE42
NOZZLE36
NOZZLE30
NOZZLE44
NOZZLE38
NOZZLE32
EVEN NOZZLES
5V
C202
100NF
GND5
U2
A5817SEP
*OEC
*OED
NOZZLE2
NOZZLE22
NOZZLE16
NOZZLE10
NOZZLE4
NOZZLE24
NOZZLE18
NOZZLE12
NOZZLE6
NOZZLE26
NOZZLE20
NOZZLE14
NOZZLE8
NOZZLE28
NOZZLE20
NOZZLE14
NOZZLE8
NOZZLE2
NOZZLE22
NOZZLE16
NOZZLE10
NOZZLE4
NOZZLE24
NOZZLE18
NOZZLE12
NOZZLE6
NOZZLE26
+24V_IN

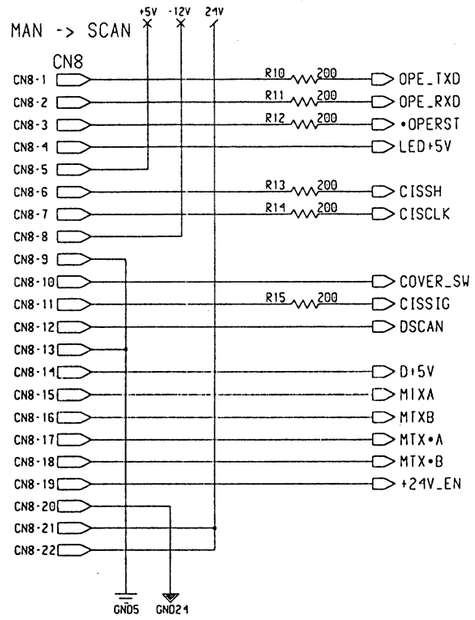

CN2
00-8370-301-000-800
COMMON_C3
COMMON_C1
NOZZLE55
NOZZLE53
NOZZLE51
NOZZLE33
NOZZLE39
NOZZLE45
NOZZLE49
NOZZLE47
NOZZLE43
NOZZLE41
NOZZLE37
NOZZLE35
NOZZLE31
NOZZLE29
NOZZLE25
NOZZLE23
NOZZLE19
NOZZLE17
NOZZLE13
NOZZLE11
NOZZLE9
NOZZLE7
NOZZLE5
NOZZLE3
NOZZLE1
NOZZLE15
NOZZLE21
NOZZLE27

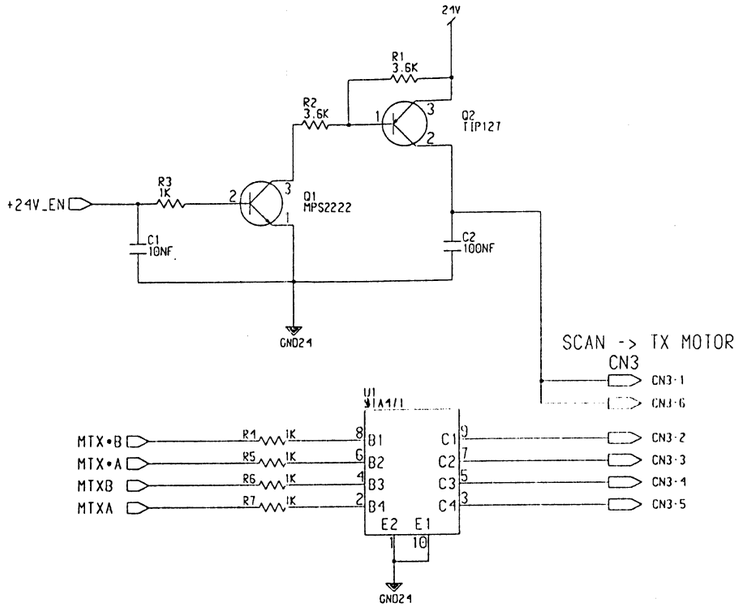

CN1
00-8370-301-000-800
COMMON_C2
COMMON_C4
NOZZLE28
NOZZLE22
NOZZLE16
NOZZLE2
NOZZLE4
NOZZLE6
NOZZLE8
NOZZLE10
NOZZLE12
NOZZLE14
NOZZLE18
NOZZLE20
NOZZLE24
NOZZLE26
NOZZLE30
NOZZLE32
NOZZLE36
NOZZLE38
NOZZLE42
NOZZLE44
NOZZLE48
NOZZLE50
NOZZLE46
NOZZLE40
NOZZLE34
NOZZLE52
NOZZLE54
NOZZLE56

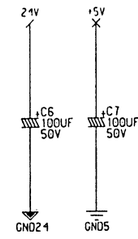

24V
R201
2.1
R200
2.1
R202
2.1
R203
22.1
C201
1000UF
C1
C3
C2
C4
560PF
560PF
560PF
560PF
GND24
COMMON_C1
COMMON_C2
COMMON_C3
COMMON_C4

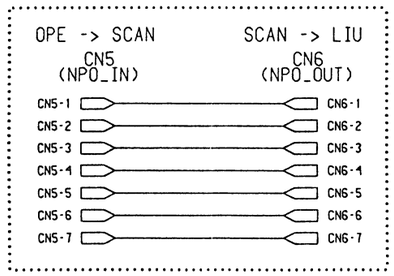

+24V
L1
LF_PWR
Bead
1NF
C231
GND5
+24V
L2
CR_PWR
Bead
C230
1NF
GND5
LF_PWR
5V
R18
3.6K
R19
3.6K
Q3
IIP127
D3
DS4002
R21
1K
LFEN
Q4
MMBT2222ALT1
GND24
C204
100NF
GND24
CN6
U4
LFPHA
LFPHB
LFPHC
LFPHD
R11
R12
R14
R16
1K
STA471A
GND24
COM_A(BLUE)
COM_B(BLUE)
A(RED)
*A(ORG)
B(YEL)
*B(BLUE)
LF MOTOR
0965-2068(5273-06A1
W1
LF MOTOR
CN6
COM_A(BLUE)
COM_B(BLUE)
A(RED)
*A(ORG)
B(YEL)
*B(BLUE)
LF MOTOR
0965-2068(5273-06A1
CR_PWR
5V
C12
100NF
C205
100NF
GND5
GND24
CRVREF
*CR1A1
*CR1A0
CRPHA
U5
PBL3717A
C9
22PF
R94
1K
C10
820PF
R20
56K
C11
820PF
R255
0.5 1/2W
GND24
5V
R24
1.21K
CRVREF
R22
10K
GND5
CN4
A(RED)
*A(ORG)
B(YEL)
*B(BLUE)
CR MOTOR
0965-2048(5273-04A1
W2
CR_MOTOR
CR MOTOR
CN4
A(RED)
*A(ORG)
B(YEL)
*B(BLUE)
0965-2048(5273-04A1
CR_PWR
5V
C8
100NF
C300
100NF
GND5
GND24
CRVREF
*CR1B1
*CR1B0
CRPHB
U3
PBL3717A
C5
22PF
R9
1K
C6
820PF
R7
56K
C7
820PF
R204
0.5 1/2W
GND24

1-4. Scan Circuit Diagam

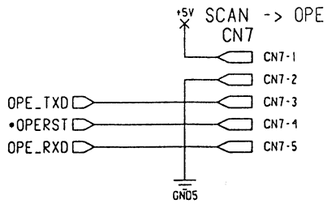


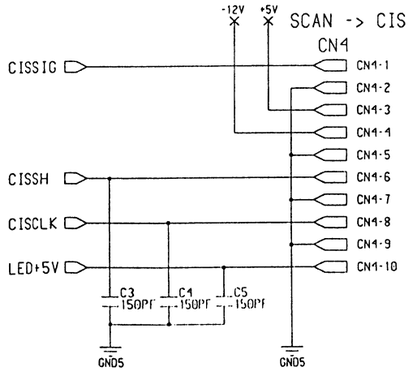


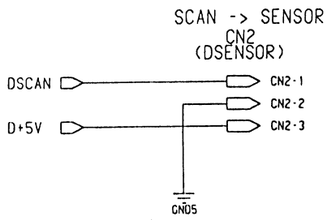




CN5,6 : UNUSED ; PO MODEL -> JG92-00005B
CN5,6 : USED ; NPO MODEL-> JG92-00005C







2 Electrical Parts List

2-1 Main PBA

	No.	Description	SEC Code	Remark
		Assembly Main PCB, SF4000	JG92-00567B	
		Assembly Main PCB, SF4100	JG92-00561B	
		Assembly Main PCB, SF4200	JG92-00562B	
		- Capacitors -		
	C1	AL, SMD, 33 µF, 20 %, 35 V	2402-000172	
	C2	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C3	AL, SMD, 100 µF, 20 %, 16 V	2402-000168	
	C4	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C5	AL, SMD, 10 µF, 20 %, 16 V, GP	2402-000176	
	C6	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C7	AL, SMD, 10 µF, 20 %, 16 V, GP	2402-000176	
	C8	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C9	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C10	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C11	AL, SMD, 4.7 µF, 20 %, 35 V	2402-000173	
	C12	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C13	AL, SMD, 10 µF, 20 %, 16 V, GP	2402-000176	
	C15	Ceramic, Chip, 22 pF, 5 %, 50 V	2203-000634	
	C16	Ceramic, Chip, 22 pF, 5 %, 50 V	2203-000634	
	C18	AL, SMD, 22 µF, 20 %, 16 V	2402-000135	
	C19	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C20	Ceramic, Chip, 18 pF, 5 %, 50 V	2203-000429	
	C21	Ceramic, Chip, 39 pF, 5 %, 50 V	2203-000858	
	C22	Ceramic, Chip, 1 nF, 5 %, 50 V	2203-000455	
	C23	TA, Chip, 1 µF, 20 %, 16 V	2404-000151	
	C24	Ceramic, Chip, 1 nF, 5 %, 50 V	2203-000455	
	C25	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C26	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C27	Ceramic, Chip, 1 nF, 5 %, 50 V	2203-000455	
	C28	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C29	AL, SMD, 10 µF, 20 %, 35 V, GP	2402-000117	
	C30	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C31	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C32	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C33	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C38	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C39	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C40	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	

	No.	Description	SEC Code	Remark
	C43	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C59	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C60	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C61	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C63	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C64	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C65	AL, SMD, 2.2 µF, 20 %, 50 V, GP	2402-000130	
	C66	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C67	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C68	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C69	AL, SMD, 1 µF, 20 %, 50 V	2402-000170	
	C70	AL, SMD, 4.7 µF, 20 %, 35 V	2402-000173	
	C71	Ceramic, Chip, 470 pF, 5 %, 50 V	2203-000953	Only SF4200
	C72	Ceramic, Chip, 470 pF, 5 %, 50 V	2203-000953	Only SF4200
	C73	Ceramic, Chip, 470 pF, 5 %, 50 V	2203-000953	Only SF4200
	C76	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	Only SF4200
	C77	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	Only SF4200
	C78	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	Only SF4200
	C79	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C80	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C81	Ceramic, Chip, 220 pF, 5 %, 50 V	2203-001476	Use SF4100/4200
	C82	Ceramic, Chip, 100 pF, 5 %, 50 V	2203-000239	Use SF4100/4200
	C85	Ceramic, Chip, 220 pF, 5 %, 50 V	2203-001476	Use SF4100/4200
	C86	Ceramic, Chip, 22 pF, 5 %, 50 V	2203-000634	
	C87	Ceramic, Chip, 22 pF, 5 %, 50 V	2203-000634	
	C88	Ceramic, Chip, 1 nF, 5 %, 50 V	2203-000455	
	C89	Ceramic, Chip, 1 nF, 5 %, 50 V	2203-000455	
	C90	Ceramic, Chip, 1 nF, 5 %, 50 V	2203-000455	
	C91	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C92	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	Use SF4100/4200
	C98	Ceramic, Chip, 15 nF, 10 %, 50 V	2203-000374	
	C99	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C100	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C101	Ceramic, Chip, 680 pF, 5 %, 50 V	2203-001132	
	C104	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C106	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C111	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C112	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C113	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C114	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C117	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C301	Ceramic, Chip, 47 pF, 5 %, 50 V	2203-001002	

	No.	Description	SEC Code	Remark
	C302	Ceramic, Chip, 47 pF, 5 %, 50 V	2203-001002	
	C503	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C504	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C505	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C508	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C509	Ceramic, Chip, 1 nF, 5 %, 50 V	2203-000455	
	C510	Ceramic, Chip, 1 nF, 5 %, 50 V	2203-000455	
	C511	Ceramic, Chip, 1 nF, 5 %, 50 V	2203-000455	
	C512	Ceramic, Chip, 1 nF, 5 %, 50 V	2203-000455	
	C513	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C514	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	Use SF4100/4200
	C517	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	Use SF4100/4200
	C518	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C519	Ceramic, Chip, 180 pF, 5 %, 50 V	2203-000408	
	C520	Ceramic, Chip, 180 pF, 5 %, 50 V	2203-000408	
	C521	Ceramic, Chip, 47 pF, 5 %, 50 V	2203-001002	
	C522	Ceramic, Chip, 47 pF, 5 %, 50 V	2203-001002	
	C523	Ceramic, Chip, 47 pF, 5 %, 50 V	2203-001002	
	C524	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C525	Ceramic, Chip, 1 nF, 5 %, 50 V	2203-000455	
	C526	Ceramic, Chip, 470 pF, 5 %, 50 V	2203-000953	
	C527	Ceramic, Chip, 470 pF, 5 %, 50 V	2203-000953	
	C528	Ceramic, Chip, 180 pF, 5 %, 50 V	2203-000408	
		- Diodes -		
	D1	Diode-Schottky, RB420D, 25 V	0404-000112	
	D2	Diode-Schottky, RB420D, 25 V	0404-000112	
	D3	Diode-Switching, MMSD914T	0401-000116	
	D4	Diode-Switching, MMSD914T	0401-000116	
	D5	Diode-Schottky, RB420D, 25 V	0404-000112	
	D6	Diode-Switching, MMSD914T	0401-000116	
	D7	Diode-Switching, MMSD914T	0401-000116	
		- IC's -		
	U1	Micro Computer: SF4000	JG09-10001A	
	U2	Analog Switch, GD4052BD	1001-000116	
	U4	TR Array: TD62503F, NPN, 7	0506-000178	
	U5	MODEM: R96DFXL, QFP, 100P	1205-000246	
	U6	OP AMP: 4558, SOP, 8P, 150	1201-000189	
	U9	EPROM: 27C010, 128Kx8BIT	1102-001041	
	U9-1	Socket-IC, 32P, DIP, SN, 2.54	3704-000255	
	U10	SRAM, 24257, 32Kx8BIT, SOP	1106-001069	
	U11	DRAM, 514800, 512Kx8BIT	1105-000181	
	U12	Socket-IC, 28P, SOJ, SN, 1.27	3704-001005	

	No.	Description	SEC Code	Remark
	U13	CMOS LOGIC: 4053B, BUFFER	0801-000206	
	U14	CMOS LOGIC: 4053B, BUFFER	0801-000206	
	U15	CMOS LOGIC: 4053B, BUFFER	0801-000206	
	U16	OP AMP, 82, SOP, 8P, 150	1201-000178	
	U17	Voltage Comp.: 520, TO-9	1202-000159	
	U18	Audio AMP, 34119, SOP, 8P	1201-000105	
	U22	CMOS LOGIC, 74HC244, Buffer	0801-000945	
	U23	LINE DRIVER: 1488, SOP	1006-000163	Only SF4200
	U24	LINE RECEIVER: 1489, SOP	1006-000284	Only SF4200
	U25	ASIC, PEGASUS: SF4000	JG13-10001A	
	U26	CMOS LOGIC, 74HC14, SCHI	0801-000311	
	U27	CMOS LOGIC, 74HC244, Buffer	0801-000945	
	U30	CMOS LOGIC, 74HC244, Buffer	0801-000945	Use SF4100/4200
	U32	CMOS LOGIC, 74HC244, Buffer	0801-000945	
	U33	CMOS Logic, Inverter, 74HC14	0801-000311	Only SF4200
	U34	CMOS LOGIC, 74HC32, OR Gate	0801-000410	Use SF4100/4200
	U35	CMOS LOGIC, 74HC08, AND Gate	0801-000387	Use SF4100/4200
	U36	CMOS LOGIC, 74HC273, D F-F	0801-000683	
		- Resistors -		
	R1	Chip, 100 ohm, 5 %, 1/10 W, DA	2007-000290	
	R2	Chip, 100 ohm, 5 %, 1/10 W, DA	2007-000290	
	R4	Chip, 10 kom, 5 %, 1/10 W, DA	2007-000300	
	R5	Chip, 0 ohm, 5 %, 1/8 W, DA, T	2007-000029	
	R6	Chip, 620 ohm, 5 %, 1/10 W, DA	2007-001092	
	R7	Chip,10 kohm, 5 %, 1/10 W, DA	2007-000300	
	R8	Chip, 390 ohm, 5 %, 1/10 W, DA	2007-000822	
	R9	Chip, 39 kohm, 5 %, 1/10 W, DA	2007-000830	
	R10	Chip, 100 kohm, 5 %, 1/10 W, DA	2007-000282	
	R12	Chip, 2.2 kohm, 5 %, 1/10 W, DA	2007-000493	
	R13	Chip, 2.2 kohm, 5 %, 1/10 W, DA	2007-000493	
	R14	Chip, 2.2 kohm, 5 %, 1/10 W, DA	2007-000493	
	R15	Chip, 2.2 kohm, 5 %, 1/10 W, DA	2007-000493	
	R16	Chip, 100 kohm, 5 %, 1/10 W, DA	2007-000282	
	R17	Chip, 180 ohm, 5 %, 1/10 W. DA	2007-000449	
	R18	Chip, 330 ohm, 5 %, 1/10 W, DA	2007-000766	
	R19	Chip, 10 Mohm, 5 %, 1/10 W, DA	2007-000304	
	R21	Chip, 10 kohm, 5 %, 1/10 W, DA	2007-000300	
	R22	Chip, 10 kohm, 5 %, 1/10 W, DA	2007-000300	
	R23	Chip, 10 kohm, 5 %, 1/10 W, DA	2007-000300	
	R25	Chip, 20 ohm, 5 %, 1/10 W, DA	2007-000551	
	R26	Chip, 150 ohm, 5 %, 1/10 W, DA	2007-000401	
	R27	Chip, 86.6 kohm, 5 %, 1/10 W, DA	2007-001220	

	No.	Description	SEC Code	Remark
	R28	Chip, 17.4 kohm, 1%,1/10 W, DA	2007-000435	
	R29	Chip, 10 kohm, 5 %, 1/10 W, DA	2007-000300	
	R30	Chip, 86.6 kohm, 5 %, 1/10 W, DA	2007-001220	
	R31	Chip, 3 kohm, 5 %, 1/10 W, DA	2007-000844	
	R32	Chip, 100 kohm, 1 %, 1/10 W, DA	2007-000277	
	R33	Chip, 47.5 kohm, 1%, 1/10 W, DA	2007-000920	
	R34	Chip, 10 kohm, 5 %, 1/10 W, DA	2007-000300	
	R35	Chip, 10 kohm, 5 %, 1/10 W, DA	2007-000300	
	R36	Chip, 820 ohm, 5 %, 1/10 W, DA	2007-001201	
	R37	Chip, 1 Mohm, 5 %, 1/10 W, DA	2007-000477	
	R38	Chip, 0 ohm, 5 %, 1/10 W, DA, T	2007-000029	
	R39	Chip, 0 ohm, 5 %, 1/10 W, DA, T	2007-000029	
	R40	Chip, 0 ohm, 5 %, 1/10 W, DA, T	2007-000029	
	R65	Chip, 150 kohm, 5 %, 1/10 W, DA	2007-000395	
	R68	Chip, 10 kohm, 5 %, 1/10 W, DA	2007-000300	
	R69	Chip, 12 kohm, 5 %, 1/10 W, DA	2007-000355	
	R70	Chip, 1 kohm, 5 %, 1/10 W, DA	2007-000468	
	R71	Chip, 75 kohm, 5 %, 1/10 W, DA	2007-000002	
	R72	Chip, 270 kohm, 5 %, 1/10 W, DA	2007-000635	
	R73	Chip, 1 Mohm, 5 %, 1/10 W, DA	2007-000477	
	R77	Chip, 1 kohm, 5 %, 1/10 W, DA	2007-000468	
	R78	Chip, 3 kohm, 5 %, 1/10 W, DA	2007-000844	
	R79	Chip, 75 kohm, 5 %, 1/10 W, DA	2007-000002	
	RS0	Chip, 68 kohm, 5 %, 1/10 W, DA	2007-000001	
	RS1	Chip, 30 kohm, 5 %, 1/10 W, DA	2007-000738	
	RS2	Chip, 68 kohm, 5 %, 1/10 W, DA	2007-000001	
	RS5	Chip, 100 kohm, 5 %, 1/10 W, DA	2007-000282	
	RS6	Chip, 47 kohm, 5 %, 1/10W, DA	2007-000941	
	RS7	Chip, 27 kohm, 5 %, 1/10 W, DA	2007-000653	
	RS8	Chip, 10 kohm, 5 %, 1/10 W, DA	2007-000300	
	RS9	Chip, 100 kohm, 5 %, 1/10 W, DA	2007-000282	
	R90	Chip, 56 kohm, 5 %,1/10 W, DA	2007-001039	
	R91	Chip, 18 kohm, 5 %, 1/10 W, DA	2007-000457	
	R94	Chip, 200 ohm, 5 %, 1/10 W, DA	2007-000026	
	R95	Chip, 200 ohm, 5 %, 1/10 W, DA	2007-000026	
	R96	Chip, 47 kohm, 5 %, 1/10 W, DA	2007-000941	
	R97	Chip, 220 ohm, 5 %, 1/10 W, DA	2007-000572	
	R98	Chip, 220 ohm, 5 %, 1/10 W, DA	2007-000572	
	R99	Chip, 10 kohm, 5 %, 1/10 W, DA	2007-000300	
	R100	Chip, 10 kohm, 5 %, 1/10 W, DA	2007-000300	
	R102	Chip, 330 kohm, 5 %, 1/10 W, DA	2007-000757	
	R105	Chip, 10 kohm, 5 %, 1/10 W, DA	2007-000300	

	No.	Description	SEC Code	Remark
	R112	Chip, 5.1 kohm, 5 %, 1/10 W, DA	2007-000964	
	R113	Chip, 5.1 kohm, 5 %, 1/10 W, DA	2007-000964	
	R114	Chip, 5.1 kohm, 5 %, 1/10 W, DA	2007-000964	
	R115	Chip, 5.1 kohm, 5 %, 1/10 W, DA	2007-000964	
	R116	Chip, 5.1 kohm, 5 %, 1/10 W, DA	2007-000964	
	R117	Chip, 1 kohm, 5 %, 1/10 W, DA	2007-000468	Use SF4100/4200
	R118	Chip, 1 kohm, 5 %, 1/10 W, DA	2007-000468	Use SF4100/4200
	R119	Chip, 1 kohm, 5 %, 1/10 W, DA	2007-000468	Use SF4100/4200
	R120	Chip, 1 kohm, 5 %, 1/10 W, DA	2007-000468	Use SF4100/4200
	R121	Chip, 1 kohm, 5 %, 1/10 W, DA	2007-000468	Use SF4100/4200
	R122	Chip, 1 kohm, 5 %, 1/10 W, DA	2007-000468	Use SF4100/4200
	R123	Chip, 1 kohm, 5 %, 1/10 W, DA	2007-000468	Use SF4100/4200
	R124	Chip, 1 kohm, 5 %, 1/10 W, DA	2007-000468	Use SF4100/4200
	R125	Chip, 100 ohm, 5%, 1/10 W, DA	2007-000290	Use SF4100/4200
	R126	Chip, 100 ohm, 5%, 1/10 W, DA	2007-000290	Use SF4100/4200
	R127	Chip, 100 ohm, 5%, 1/10 W, DA	2007-000290	Use SF4100/4200
	R128	Chip, 100 ohm, 5%, 1/10 W, DA	2007-000290	Use SF4100/4200
	R129	Chip, 100 ohm, 5%, 1/10 W, DA	2007-000290	Use SF4100/4200
	R130	Chip, 100 ohm, 5%, 1/10 W, DA	2007-000290	Use SF4100/4200
	R131	Chip, 100 ohm, 5%,1/10 W, DA	2007-000290	Use SF4100/4200
	R132	Chip, 100 ohm, 5%,1/10 W, DA	2007-000290	Use SF4100/4200
	R133	Chip, 0 ohm, 5 %, 1/10 W, DA	2007-000029	
	R134	Chip, 0 ohm, 5 %, 1/10 W, DA	2007-000029	
	R136	Chip, 4.7 kohm, 5%,1/10 W, DA	2007-000872	
	R137	Chip, 4.7 kohm, 5%,1/10 W, DA	2007-000872	
	R138	Chip, 4.7 kohm, 5%,1/10 W, DA	2007-000872	
	R139	Chip, 4.7 kohm, 5%,1/10 W, DA	2007-000872	
	R140	Chip, 100 kohm, 5 %, 1/10 W, DA	2007-000282	
	R141	Chip, 10 kohm, 5 %, 1/10 W, DA	2007-000300	
	R146	Chip, 100 kohm, 5 %, 1/10 W, DA	2007-000282	
	R147	Chip, 10 kohm, 5 %, 1/10 W, DA	2007-000300	
	R150	Chip, 5.6 kohm, 5 %, 1/10 W, DA	2007-000981	
	R151	Chip, 0 ohm, 5 %, 1/10 W, DA	2007-000029	
	R153	Chip, 100 ohm, 5 %, 1/10 W, DA	2007-000290	
	R154	Chip, 100 ohm, 5 %, 1/10 W, DA	2007-000290	
	R157	Chip, 0 ohm, 5 %, 1/10 W, DA	2007-000029	
	R159	Chip, 820 ohm, 5 %, 1/10 W, DA	2007-001201	
	R160	Chip, 0 ohm, 5 %, 1/10 W, DA	2007-000029	
	R167	Chip, 0 ohm, 5 %, 1/10 W, DA	2007-000029	
	R169	Chip, 10 kohm, 5 %, 1/10 W, DA	2007-000300	
	R170	Chip, 0 ohm, 5 %, 1/10 W, DA	2007-000029	
	R171	Chip, 0 ohm, 5 %, 1/10 W, DA	2007-000029	

	No.	Description	SEC Code	Remark
	R173	Chip, 1 kohm, 5 %,1/10 W, DA	2007-000468	
	R174	Chip, 1 kohm, 5 %,1/10 W, DA	2007-000468	
	R181	Chip, 0 ohm, 5 %, 1/10 W, DA	2007-000029	
	R193	Chip, 820 ohm, 5 %, 1/10 W, DA	2007-001201	
	R194	Chip, 820 ohm, 5 %, 1/10 W, DA	2007-001201	
	R195	Chip, 820 ohm, 5 %, 1/10 W, DA	2007-001201	
	R196	Chip, 820 ohm, 5 %, 1/10 W, DA	2007-001201	
	R197	Chip, 0 ohm, 5 %, 1/10 W, DA	2007-000029	
	R198	Chip, 0 ohm, 5 %, 1/10 W, DA	2007-000029	
	R200	Chip, 820 ohm, 5 %, 1/10 W, DA	2007-001201	
	R203	Chip, 390 ohm, 5 %, 1/10 W, DA	2007-000822	
	R301	Chip, 47 ohm, 5 %, 1/10 W, DA	2007-000947	
	R302	Chip, 47 ohm, 5 %, 1/10 W, DA	2007-000947	
	R303	Chip, 47 ohm, 5 %, 1/10 W, DA	2007-000947	
	R304	Chip, 47 ohm, 5 %, 1/10 W, DA	2007-000947	
	R305	Chip, 47 ohm, 5 %, 1/10 W, DA	2007-000947	
	R306	Chip, 47 ohm, 5 %, 1/10 W, DA	2007-000947	
	R307	Chip, 47 ohm, 5 %, 1/10 W, DA	2007-000947	
	R308	Chip, 47 ohm, 5 %, 1/10 W, DA	2007-000947	
	R317	Chip, 120 ohm, 5 %, 1/10 W, DA	2007-000023	
	R318	Chip, 120 ohm, 5 %, 1/10 W, DA	2007-000023	
	R319	Chip, 120 ohm, 5 %, 1/10 W, DA	2007-000023	
	R320	Chip, 120 ohm, 5 %, 1/10 W, DA	2007-000023	
	R321	Chip, 120 ohm, 5 %, 1/10 W, DA	2007-000023	
	R322	Chip, 120 ohm, 5 %, 1/10 W, DA	2007-000023	
	R323	Chip, 120 ohm, 5 %, 1/10 W, DA	2007-000023	
	R324	Chip, 120 ohm, 5 %, 1/10 W, DA	2007-000023	
	R325	Chip, 120 ohm, 5 %, 1/10 W, DA	2007-000023	
	R326	Chip, 120 ohm, 5 %, 1/10 W, DA	2007-000023	
	R327	Chip, 120 ohm, 5 %, 1/10 W, DA	2007-000023	
	R328	Chip, 120 ohm, 5 %, 1/10 W, DA	2007-000023	
	R329	Chip, 120 ohm, 5 %, 1/10 W, DA	2007-000023	
	R330	Chip, 120 ohm, 5 %, 1/10 W, DA	2007-000023	
	R331	Chip, 120 ohm, 5 %, 1/10 W, DA	2007-000023	
	R332	Chip, 120 ohm, 5 %, 1/10 W, DA	2007-000023	
	R333	Chip, 120 ohm, 5 %, 1/10 W, DA	2007-000023	
	R334	Chip, 120 ohm, 5 %, 1/10 W, DA	2007-000023	
	R335	Chip, 120 ohm, 5 %, 1/10 W, DA	2007-000023	
	R336	Chip, 47 ohm, 5 %, 1/10 W, DA	2007-000947	
	R337	Chip, 47 ohm, 5 %, 1/10 W, DA	2007-000947	
	R338	Chip, 47 ohm, 5 %, 1/10 W, DA	2007-000947	
	R339	Chip, 47 ohm, 5 %, 1/10 W, DA	2007-000947	

	No.	Description	SEC Code	Remark
	R340	Chip, 47 ohm, 5 %, 1/10 W, DA	2007-000947	
	R341	Chip, 47 ohm, 5 %, 1/10 W, DA	2007-000947	
	R342	Chip, 47 ohm, 5 %, 1/10 W, DA	2007-000947	
	R343	Chip, 47 ohm, 5 %, 1/10 W, DA	2007-000947	
	R345	Chip, 47 ohm, 5 %, 1/10 W, DA	2007-000947	
	R346	Chip, 47 ohm, 5 %, 1/10 W, DA	2007-000947	
	R347	Chip, 47 ohm, 5 %, 1/10 W, DA	2007-000947	
	R348	Chip, 47 ohm, 5 %, 1/10 W, DA	2007-000947	
	R349	Chip, 47 ohm, 5 %, 1/10 W, DA	2007-000947	
	R350	Chip, 47 ohm, 5 %, 1/10 W, DA	2007-000947	
	R351	Chip, 47 ohm, 5 %, 1/10 W, DA	2007-000947	
	R352	Chip, 47 ohm, 5 %, 1/10 W, DA	2007-000947	
	R353	Chip, 47 ohm, 5 %, 1/10 W, DA	2007-000947	
	R354	Chip, 47 ohm, 5 %, 1/10 W, DA	2007-000947	
	R355	Chip, 0 ohm, 5 %, 1/10 W, DA	2007-000029	Only SF4200
	R359	Chip, 0 ohm, 5 %, 1/10 W, DA	2007-000029	
	R360	CORE-FERRITE BEAD: AB, 3.2x	3301-000370	
	R361	Chip, 820 ohm, 5 %, 1/10 W, DA	2007-001201	
	R362	Chip, 820 ohm, 5 %, 1/10 W, DA	2007-001201	
		- Miscellaneous -		
	BAT	BATTERY-LI: 3 V, 210 mAH, BUTT	4301-000108	
	JP1	CONNECTOR-HEADER: NOWALL, 2	3711-001422	
	JP1-1	CONNECTOR-SHUNT: 2P, 1R, 2.5	3710-000104	
	L28	CORE-FERRITE BEAD: AB, 3.2x	3301-000369	
	L30	CORE-FERRITE BEAD: AB, 3.2x	3301-000370	
	P1	CONNECTOR-HEADER: 22P, 2R	3711-002002	
	P2	CONNECTOR-HEADER: 3WALL, 11P	3711-000404	
	P3	CONNECTOR-DSUB: 9P, 2R, FEMA	3701-000216	Only SF4200
	P4	CONNECTOR-HEADER: NOWALL	3711-002005	
	P5	CONNECTOR-RIBBON: 36P, FEMA	3702-001001	Use SF4100/4200
	P6	CONNECTOR-HEADER: 3WALL, 2P	3711-000443	
	P7	CONNECTOR-FPC/FC/PIC: 20P	3708-000208	
	P8	CONNECTOR-HEADER: 3WALL, 2P	3711-000443	
	Q1	TR-Small Signal: KSA928A-Y	0501-000317	
	Y1	CRYSTAL-UNIT: 32.768 KHz, 5P	2801-001498	
	Y2	CRYSTAL-UNIT: 24.00014 MHz	2801-001528	
	Y4	OSCILLATOR-Clock: 18.000 MHz	2804-001001	

2-2 Printer PBA

	No.	Description	SEC Code	Remark
		Assembly Printer PCB	JG92-00628A	
		- Capacitors -		
	C1	Ceramic, Chip, 560 pF, 5 %, 50 V	2203-001060	
	C2	Ceramic, Chip, 560 pF, 5 %, 50 V	2203-001060	
	C3	Ceramic, Chip, 560 pF, 5 %, 50 V	2203-001060	
	C4	Ceramic, Chip, 560 pF, 5 %, 50 V	2203-001060	
	C5	Ceramic, Chip, 22 pF, 5 %, 50 V	2203-000634	
	C6	Ceramic, Chip, TC, 820 pF	2203-000009	
	C7	Ceramic, Chip, TC, 820 pF	2203-000009	
	C8	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000199	
	C9	Ceramic, Chip, 22 pF, 5 %, 50 V	2203-000634	
	C10	Ceramic, Chip, TC, 820 pF	2203-000009	
	C11	Ceramic, Chip, TC, 820 pF	2203-000009	
	C12	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000199	
	C19	Ceramic, Chip, 22 pF, 5 %, 50 V	2203-000634	
	C20	Ceramic, Chip, 7 pF, 5 %, 50 V	2203-001208	
	C21	Ceramic, Chip, 7 pF, 5 %, 50 V	2203-001208	
	C23	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000199	
	C24	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000199	
	C25	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000199	
	C26	Ceramic, Chip, 1 nF, 5 %, 50 V	2203-000455	
	C27	Ceramic, Chip, 1 nF, 5 %, 50 V	2203-000455	
	C28	Ceramic, Chip, 1 nF, 5 %, 50 V	2203-000455	
	C29	Ceramic, Chip, 1 nF, 5 %, 50 V	2203-000455	
	C30	Ceramic, Chip, 22 pF, 5 %, 50 V	2203-000634	
	C31	Ceramic, Chip, 22 pF, 5 %, 50 V	2203-000634	
	C32	Ceramic, Chip, 1 nF, 5 %, 50 V	2203-000455	
	C33	Ceramic, Chip, 1 nF, 5 %, 50 V	2203-000455	
	C34	Ceramic, Chip, 100 pF, 5 %, 50 V	2203-000239	
	C35	Ceramic, Chip, 100 pF, 5 %, 50 V	2203-000239	
	C36	Ceramic, Chip, 1 nF, 5 %, 50 V	2203-000455	
	C37	Ceramic, Chip, 1 nF, 5 %, 50 V	2203-000455	
	C38	Ceramic, Chip, 220 pF, 5 %, 50 V	2203-000595	
	C39	Ceramic, Chip, 220 pF, 5 %, 50 V	2203-000595	
	C40	Ceramic, Chip, 22 pF, 5 %, 50 V	2203-000634	
	C41	Ceramic, Chip, 220 pF, 5 %, 50 V	2203-000595	
	C42	Ceramic, Chip, 1 nF, 5 %, 50 V	2203-000455	
	C43	Ceramic, Chip, 1 nF, 5 %, 50 V	2203-000455	

	No.	Description	SEC Code	Remark
	C44	Ceramic, Chip, 1 nF, 5 %, 50 V	2203-000455	
	C46	Ceramic, Chip, 22 pF, 5 %, 50 V	2203-000634	
	C47	Ceramic, Chip, 22 pF, 5 %, 50 V	2203-000634	
	C48	Ceramic, Chip, 22 pF, 5 %, 50 V	2203-000634	
	C49	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000199	
	C200	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000199	
	C201	AL: 1000 µF, 20 %, 35 V, GP	2401-000172	
	C202	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000199	
	C204	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C205	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C212	AL: 100 µF, 20 %, 25 V, WT	2401-000317	
	C215	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C219	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C220	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C223	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C224	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C225	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
	C226	Ceramic, Chip, 1 nF, 5 %, 50 V	2203-000455	
	C228	Ceramic, Chip, 1 nF, 5 %, 50 V	2203-000455	
	C229	Ceramic, Chip, 22 pF, 5 %, 50 V	2203-000634	
	C230	Ceramic, Chip, 1 nF, 5 %, 50 V	2203-000455	
	C231	Ceramic, Chip, 1 nF, 5 %, 50 V	2203-000455	
	C300	Ceramic, Chip, 100 nF, +80 %, -20 %, 50 V	2203-000192	
		- Diodes -		
	D1	ARRAY, DAP202K, 80 V	0407-000116	
	D2	ARRAY, DAP202K, 80 V	0407-000116	
	D3	RECTIFIER, 1N4002	0402-000371	
	ZD1	ZENER, MMBZ5249BL	0403-000286	
		- IC's -		
	U1	DECORDER: A5817SEP, QFP	1204-000359	
	U2	DECORDER: A5817SEP, QFP	1204-000359	
	U3	MOTOR DRIVER: PBL3717A	1003-000243	
	U4	TR-ARRAY:STA471A, NPN, 4, 4W	0506-001019	
	U5	MOTOR DRIVER: PBL3717A	1003-000243	
	U10	EPROM: 24C02, 256x8BIT	1103-000129	
	U12	DRAM, 514800, 512Kx8BIT	1105-000181	
	U13	ASIC VENUS:COLUMBUS	JB13-10050A	
	U14	EPROM: 27C020, 256Kx8BIT	1102-000132	
	U14	Socket-IC, 32P, DIP, SN, 2.54	3704-000256	
	U16	TTL: 74LS245, TRANSCEIVE	0803-000916	
	U17	CMOS LOGIC: 74HC14, SOP	0801-000012	

	No.	Description	SEC Code	Remark
		- Resistors -		
	R1	Chip, 5,1 kohm, 5 %, 1/10 W, DA	2007-000964	
	R2	Chip, 200 ohm, 5 %, 1/10 W, DA	2007-000026	
	R3	Chip, 5.1 kohm, 5 %, 1/10 W, DA	2007-000964	
	R4	Chip, 5.1 kohm, 5 %, 1/10 W, DA	2007-000964	
	R5	Chip,10 kohm, 5 %, 1/10 W, DA	2007-000300	
	R6	Chip, 39 ohm, 5 %, 1/10 W, DA	2007-000028	
	R7	Chip, 56 kohm, 5 %, 1/10 W, DA	2007-001039	
	R9	Chip, 1 kohm, 5 %, 1/10 W, DA	2007-000468	
	R11	Chip, 1 kohm, 5 %, 1/10 W, DA	2007-000468	
	R12	Chip, 1 kohm, 5 %, 1/10 W, DA	2007-000468	
	R13	Chip,10 kohm, 5 %, 1/10 W, DA	2007-000300	
	R14	Chip, 1 kohm, 5 %, 1/10 W, DA	2007-000468	
	R15	Chip, 39 ohm, 5 %, 1/10 W, DA	2007-000028	
	R16	Chip, 1 kohm, 5 %, 1/10 W, DA	2007-000468	
	R17	Chip, 200 ohm, 5 %, 1/10 W, DA	2007-000026	
	R18	Chip, 3.6 kohm, 5 %, 1/10 W, DA	2007-000703	
	R19	Chip, 3.6 kohm, 5 %, 1/10 W, DA	2007-000703	
	R20	Chip, 56 kohm, 5 %, 1/10 W, DA	2007-001039	
	R21	Chip, 1 kohm, 5 %, 1/10 W, DA	2007-000468	
	R22	Chip, 10 kohm, 5 %, 1/10 W, DA	2007-000300	
	R24	Chip, 1 kohm, 1 %, 1/10 W, DA	2007-000465	
	R26	Chip, 39 ohm, 5 %, 1/10 W, DA	2007-000028	
	R27	Chip, 10 kohm, 5 %, 1/10 W, DA	2007-000300	
	R28	Chip, 200 ohm, 5 %, 1/10 W, DA	2007-000026	
	R30	Chip, 10 kohm, 5 %, 1/10 W, DA	2007-000300	
	R49	Chip, 39 ohm, 5 %, 1/10 W, DA	2007-000028	
	R50	Chip, 39 ohm, 5 %, 1/10 W, DA	2007-000028	
	R51	Chip, 39 ohm, 5 %, 1/10 W, DA	2007-000028	
	R52	Chip, 39 ohm, 5 %, 1/10 W, DA	2007-000028	
	R53	Chip, 39 ohm, 5 %, 1/10 W, DA	2007-000028	
	R54	Chip, 39 ohm, 5 %, 1/10 W, DA	2007-000028	
	R55	Chip, 39 ohm, 5 %, 1/10 W, DA	2007-000028	
	R56	Chip, 39 ohm, 5 %, 1/10 W, DA	2007-000028	
	R57	Chip, 15 kohm, 5 %, 1/10 W, DA	2007-000409	
	R58	Chip, 1 kohm, 5 %, 1/10 W, DA	2007-000468	
	R60	Chip, 120 ohm, 5 %, 1/10 W, DA	2007-000023	
	R63	Chip, 750 ohm, 5 %, 1/10 W, DA	2007-001155	
	R64	Chip, 120 ohm, 5 %, 1/10 W, DA	2007-000023	
	R65	Chip, 200 ohm, 5 %, 1/10 W, DA	2007-000026	
	R66	Chip, 100 ohm, 5 %, 1/10 W, DA	2007-000290	
	R67	Chip, 100 ohm, 5 %, 1/10 W, DA	2007-000290	

	No.	Description	SEC Code	Remark
	R68	Chip, 120 ohm, 5 %, 1/10 W, DA	2007-000023	
	R69	Chip, 100 ohm, 5 %, 1/10 W, DA	2007-000290	
	R70	Chip, 100 ohm, 5 %, 1/10 W, DA	2007-000290	
	R71	Chip, 100 ohm, 5 %, 1/10 W, DA	2007-000290	
	R72	Chip, 5.1 kohm, 5 %, 1/10 W, DA	2007-000964	
	R73	Chip, 120 ohm, 5 %, 1/10 W, DA	2007-000023	
	R74	Chip, 5.1 kohm, 5 %, 1/10 W, DA	2007-000964	
	R75	Chip, 120 ohm, 5 %, 1/10 W, DA	2007-000023	
	R76	Chip, 5.1 kohm, 5 %, 1/10 W, DA	2007-000964	
	R77	Chip, 120 ohm, 5 %, 1/10 W, DA	2007-000023	
	R78	Chip, 750 ohm, 5 %, 1/10 W, DA	2007-001155	
	R79	Chip, 1 kohm, 5 %, 1/10 W, DA	2007-000468	
	R80	Chip, 5.1 kohm, 5 %, 1/10 W, DA	2007-000964	
	R82	Chip, 100 ohm, 5 %, 1/10 W, DA	2007-000290	
	R83	Chip, 100 ohm, 5 %, 1/10 W, DA	2007-000290	
	R84	Chip, 100 ohm, 5 %, 1/10 W, DA	2007-000290	
	R85	Chip, 5.1 kohm, 5 %, 1/10 W, DA	2007-000964	
	R86	Chip, 120 ohm, 5 %, 1/10 W, DA	2007-000023	
	R87	Chip, 200 ohm, 5 %, 1/10 W, DA	2007-000026	
	R88	Chip, 5.1 kohm, 5 %, 1/10 W, DA	2007-000964	
	R89	Chip, 200 ohm, 5 %, 1/10 W, DA	2007-000026	
	R90	Chip, 5.1 kohm, 5 %, 1/10 W, DA	2007-000964	
	R91	Chip, 5.1 kohm, 5 %, 1/10 W, DA	2007-000964	
	R92	Chip, 5.1 kohm, 5 %, 1/10 W, DA	2007-000964	
	R94	Chip, 1 kohm, 5 %, 1/10 W, DA	2007-000468	
	R95	Chip, 1 kohm, 5 %, 1/10 W, DA	2007-000468	
	R96	Chip, 1 Mohm, 5 %, 1/10 W, DA	2007-000477	
	R97	Chip, 39 ohm, 5 %, 1/10 W, DA	2007-000028	
	R98	Chip, 39 ohm, 5 %, 1/10 W, DA	2007-000028	
	R99	Chip, 1 kohm, 5 %, 1/10 W, DA	2007-000468	
	R101	Chip, 0 ohm, 5 %, 1/10 W, DA	2007-000029	
	R200	Fusible: 22.1 ohm, 1 %, 1/2 W	2008-000177	
	R201	Fusible: 22.1 ohm, 1 %, 1/2 W	2008-000177	
	R202	Fusible: 22.1 ohm, 1 %, 1/2 W	2008-000177	
	R203	Fusible: 22.1 ohm, 1 %, 1/2 W	2008-000177	
	R204	Carbon, 0.5 ohm, 5 5, 1/2 W, A	2001-000202	
	R255	Carbon, 0.5 ohm, 5 5, 1/2 W, A	2001-000202	
		- Miscellaneous -		
	Q1	TR-SMALL SIGNAL: MMBT2222A	0501-000457	
	Q3	TR-DARLINGTON: TIP127, PNP	0503-000134	
	Q4	TR-SMALL SIGNAL: MMBT2222A	0501-000457	
	L1	CORE-FERRITE BEAD: AB, 3.2x	3301-000325	

2-3 Scan PBA

	No.	Description	SEC Code	Remark
		Assembly Scan PCB, PO	JG92-00005B	
		Assembly, Scan PCB, NPO	JG92-00005C	
		- Capacitors -		
	C1	Ceramic, Disc, 10 nF, +80 %, -20 %	2201-000162	
	C2	Ceramic, Disc, 100 nF, +80 %, -20 %	2201-000737	
	C3	Ceramic, Disc, 150 pF, 10 %	2201-000230	
	C4	Ceramic, Disc, 150 pF, 10 %	2201-000230	
	C5	Ceramic, Disc, 150 pF, 10 %	2201-000230	
	C6	AL, 100 µF, 20 %, 50 V, GP	2401-000032	
	C7	AL, 100 µF, 20 %, 50 V, GP	2401-000032	
		- Connectors -		
	CN2	CONNECTOR-HEADER: 3 WALL, 3P	3711-000452	
	CN3	CONNECTOR-HEADER: 3 WALL, 6P	3711-000496	
	CN4	CONNECTOR-HEADER: 3 WALL, 10P	3711-000398	
	CN5	CONNECTOR-HEADER: 3 WALL, 7P	3711-000503	Used NPO
	CN6	CONNECTOR-HEADER: 3 WALL, 7P	3711-000503	Used NPO
	CN7	CONNECTOR-HEADER: 3 WALL, 5P	3711-000484	
	CN8	CONNECTOR-HEADER: 22P, 2R	3711-002002	
		- Resistors -		
	R1	METAL, 3.6 kohm, 5 %, 1/8 W, A	2004-000719	
	R2	METAL, 3.6 kohm, 5 %, 1/8 W, A	2004-000719	
	R3	METAL, 1 kohm, 5 %, 1/8 W, AA	2004-000437	
	R4	METAL, 1 kohm, 5 %, 1/8 W, AA	2004-000437	
	R5	METAL, 1 kohm, 5 %, 1/8 W, AA	2004-000437	
	R6	METAL, 1 kohm, 5 %, 1/8 W, AA	2004-000437	
	R7	METAL, 1 kohm, 5 %, 1/8 W, AA	2004-000437	
	R10	METAL, 200 ohm, 5 %, 1/8 W, AA	2004-000528	
	R11	METAL, 200 ohm, 5 %, 1/8 W, AA	2004-000528	
	R12	METAL, 200 ohm, 5 %, 1/8 W, AA	2004-000528	
	R13	METAL, 200 ohm, 5 %, 1/8 W, AA	2004-000528	
	R14	METAL, 200 ohm, 5 %, 1/8 W, AA	2004-000528	
	R15	METAL, 200 ohm, 5 %, 1/8 W, AA	2004-000528	
		- Miscellaneous -		
	Q1	TR-SMALL SIGNAL: KSP2222, NPN	0501-000485	
	Q2	TR-DARLINGTON: TIP127, PNP	0503-000135	
	U1	TR-ARRAY: STA4741A, NPN, 4, 4W	0506-001019	

NPO : No Power Operation

	No.	Description	SEC Code	Remark
	L2	CORE-FERRITE BEAD: AB, 3.2x	3301-000325	
	L3	CORE-FERRITE BEAD: AB, 3.2x	3301-000325	
	L4	CORE-FERRITE BEAD: AB, 3.2x	3301-000325	
	L5	CORE-FERRITE BEAD: AB, 3.2x	3301-000325	
	PH1	PHOTO-INTERRUPTER:TR	0604-000156	
	PH2	PHOTO-INTERRUPTER:TR	0604-000156	
	RN1	R-NETWORK: 1 kohm, 5 %, 1/8 W, A	2011-000301	
	X1	RESONATOR-CERAMIC: 40MHz	2801-001007	
	CN1	CONNECTOR-FPC: 30P, 1mm,STR	3708-000003	
	CN2	CONNECTOR-FPC: 30P, 1mm,STR	3708-000003	
	CN4	CONNECTOR-HEADER: 1WALL, 4P	3711-000225	
	CN5	CONNECTOR-HEADER: 1WALL, 3P	3711-000198	
	CN6	CONNECTOR-HEADER: 1WALL, 6P	3711-000280	
	CN7	CONNECTOR-HEADER: 1WALL, 5P	3711-000255	
	CN8	CONNECTOR-HEADER: BOX, 28P	3711-003053	
	CN9	CONNECTOR-HEADER: 3WALL, 2P	3711-000443	